Module Code DPS 5200

A Project Submitted to Middlesex University in partial fulfilment of the requirements for the degree of Doctor of Professional Studies

NATIONAL CENTRE FOR WORK BASED LEARNING PARTNERSHIPS

An investigation of the difficulties faced by practitioner researchers in publication

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December 1st, 2007

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Summary

This work based study is not only a stand alone project but can also be read in conjunction with other work based studies carried out by members of the Society of Practising Veterinary Surgeons (SPVS) Doctorate Group. This group worked through the National Centre for Work Based Learning Partnerships (NCWBLP) based at Middlesex University. The customisation of the studies was carried out by the Professional Development Foundation (PDF). The purpose of the group was to facilitate the development of postgraduate veterinary education in general practice in order to maintain lifelong learning within the profession. Within this framework this study sets out to investigate the difficulties faced by practitioner researchers in publication. The aim of the study is to increase not only the number of manuscripts published by practitioners but also to increase the number of practitioners carrying out publication. To achieve these aims the author has evaluated the existing veterinary peer reviewed journals with a view to answering the question, "does the veterinary profession in the UK need a new peer reviewed journal?" The author of the study has written a book to aid practitioners with publication. The sparse veterinary literature is reviewed together with the relevant medical literature.

A historical analysis was carried out on the four most commonly read veterinary peer reviewed journals, the Veterinary Record (VR), the Equine Veterinary Journal (EVJ), Equine Veterinary Education (EVE) and the Journal of Small Animal Practice (JSAP). Five separate case studies were carried out on successful practitioner authors, unsuccessful practitioner authors, editors of peer reviewed veterinary journals, newly qualified veterinary surgeons and final year veterinary students. The quantitative and qualitative results were recorded ethically and analysed. These results were then critically discussed and commented on. The methods of learning, experienced by the practitioner author were reflected upon. Conclusions were then reached. These showed that the main reason for lack of publication by practitioners was the relatively few manuscripts submitted by relatively few practitioners. There was no bias shown by editors against

practitioner authors. Some improvements were suggested for the journals but it was concluded that at the present time there was no need for a new veterinary peer reviewed journal. However EVJ, EVE and JSAP have agreed to have a major drive to increase practitioner input. The benefits of the project to the profession were recorded. They included a regular updated list of successful practitioner authors willing to help less experienced colleagues, with publication, to be shown on the web page of the Royal College of Veterinary Surgeons (RCVS). The agreement of the RCVS scientific committee to encourage in-practice research by co-ordinating funding. The agreement of DEFRA to regularly fund a residential course on in-practice research for practitioners at Cambridge Veterinary School and to fund resulting pieces of practitioner research. The agreement of the editor of the VR to appoint a sub-editor to help with publication of these projects.

The whole doctorate group project, of designing an award for advanced veterinary general practice, was accomplished. The modular certificate was accepted by the RCVS. This certificate was designed to have other modules added. The project by the author included the designing and acceptance of three additional modules to allow an award in equine dentistry.

Lastly a secondary finding of the project, that newly qualified veterinary graduates were under considerable pressure in practice, was exposed. The author at a local level took action. The British Veterinary Association observed this. Consultations were carried out. A new graduate mentoring project was then successfully launched nationally. The author played a key role in this initiative both nationally and locally.

Chapter 1 - introduction

I am an experienced veterinary practitioner having been a practitioner for most of my 40 year working life. Even in my undergraduate years I was an avid reader of peer reviewed veterinary journals, principally the Veterinary Record (VR). Initially I was unaware that the papers and short communications were peer reviewed. I realised the value of publication very early in my career. I wrote a letter to the VR one month after qualifying in August 1966. It was published after I left for Kenya early in 1967 (Duncanson 1967). I received 54 requests for reprints. I was not even aware that letters might be shortened at the whim of the editor. I was aware that it was the journal of the British Veterinary Association, so I assumed there was a political bias. The fact that it has a very large amount of editorial freedom has only become aware to me since I started my in depth interviews with the editorial staff.

Initially I was not able to carry out any in-practice research. I was primarily a Government Veterinary Officer. Independence in Kenya in 1964 had resulted in the retirement of the majority of veterinary general practitioners. Because of this shortage even as civil servants we were encouraged to carry out general practice in our areas. I soon realised the value of keeping accurate records. This resulted in my first paper entitled: - "The establishment of an Artificial Insemination Service for cattle in Kenya".

On my return to the UK in 1975 I became a full time general practitioner. I started to carry out small pieces of in-practice research. I gave lectures at veterinary meetings. These were followed by a discussion. Although my papers were recorded in the proceedings, the resulting discussion was not. On reflection I realise this action learning which the delegates and myself were experiencing was not being disseminated to a wider audience. I am please to record that many papers and the resulting discussions are now recorded on tape at many meetings. However at this time I did become aware that the publication of results in a peer reviewed journal was the preferable method to disseminate knowledge. Some reflective learning had started in my career but as yet I was unaware of it.

My learning could be compared to a good horse trainer who appears to have a way with horses. However in reality he is carrying out well-known behavioural training methods like habituation and positive reinforcement without any idea of their existence.

I realised that there was a peer review process when I wrote my first Short Communication (Duncanson 1980). This was accepted without change. I have only realised the rarity of such an occurrence after my interviews with the successful and unsuccessful authors. I have had other manuscripts accepted for publication. Equally I have had papers which have been refused publication in peer reviewed journals.

I regularly peer review papers for other authors at the request of editors. I can not reveal exact papers, which I have reviewed on account of ethical considerations.

I have recently completed a MSc (Duncanson 2003) while continuing to work in private practice. My wish is to continue as a practitioner at least until 2015.

This doctorate project follows a highly successful research project requested in 2000 by The Royal College of Veterinary Surgeons (RCVS) to be undertaken by The Society of Practising Veterinary Surgeons (SPVS). The project was a study to look at the possibility of developing a postgraduate education structure for General Veterinary Practice. In 2000 The SPVS Council in conjunction with a group of eight experienced veterinary practitioners, later called the 'Master's Group' commenced a three-year series of studies and consultations to establish the desirability and feasibility for a structured veterinary postgraduate education for the veterinary practitioner with recognisable awards. The eight experienced practitioners were volunteers, who responded to the request made by the SPVS Council in an open letter to the Veterinary Record (VR). This peer-reviewed journal is published weekly by The British Veterinary Association (BVA). Middlesex University, through the National Centre for Work Based Learning Partnerships (NCWBLP) guided the Master's group. The NCWBLP has developed a wide range of vocational pathways in which such a group can customise a programme in Masters and Doctorate Studies. The customisation was helped by the Professional Development Foundation (PDF). This body is a

non-profit research trust, which provides high level practitioner directed research and training.

I was one of the eight experienced practitioners in the 'Masters group'. We met once a month, visiting the practice premises of the members of the group and also at Middlesex University and utilising their facilities. We studied the competences required by an effective and experienced GP veterinary surgeon from our individual and group perspectives. The bonding between members of the group began to emerge even in these early days. We formed a learning set. We were learning about each other. We shared our individual passions and interests. Each of us found we had a different focus of interest, which gradually became apparent during our discussions, dialogue and 'Action Learning' style of looking at issues. These discussions also helped us form a congruent understanding of an effective and experienced GP. We all could empathise with such a model. The monthly meetings, regular e-mail contact and the use of an on-line 'learning net' facility all aided this process. A facilitator at these early meetings was important to drive us forward with the educational process.

We formulated our idea of the competencies required by an effective GP veterinary surgeon. We then needed to provide the evidence to back up these competences, which were a requirement by the GP members of the profession to earn a certificate. By making use of the structure of the NCWBLP Masters course we were able to plan our research projects to help us do this. The content of our individual research projects were reached as a result of discussions between the Master's Group and Professor Lane, of the PDF, and were designed to provide the optimum framework to support the research that we needed to carry out in order to achieve our goals. It was important that the eight projects were part of an overall plan to provide necessary evidence for our emergent 'product', i.e. a Postgraduate Certificate in Advanced Veterinary General Practice (AVGP).

Important principals were already starting to emerge about our final product. We thought it should be modular and relevant to our day to day work. We considered it should understand the constraints and realities of GP work when writing up case histories. We were adamant that it should be readily available, bearing in

mind time and financial requirements, to the busy solo or geographically isolated GP, and to part timers. We were of the opinion that it should not be an exam based 'knowledge' qualification but a work based 'competence' qualification. My particular area of interest was in-practice research. In the learning set meetings using 'Action Learning' techniques, what it was I was actually trying to find out, and the way I was going to go about it, was refined.

For the groups final recommendations to be influential in the post graduate development debate it was deemed extremely important that the veterinary profession as a whole should be canvassed for their opinions. It was also agreed that keeping the profession informed about what we were doing as we went along, was a valuable way of influencing the finale debate. A weekly veterinary newspaper 'The Veterinary Times' (VT) that is distributed to all the profession very kindly agreed to allow to be published a 'joint' questionnaire within one of their issues. We took this opportunity to test our thoughts out about the AVGP certificate and also to ask specific questions relevant to each of our areas of interest. It was a long questionnaire, but again the overall design of it was considered in great depth at our meetings, via e-mail and the learning net. Following a small pilot of the questionnaire it was distributed to approximately 9,000 GP veterinary surgeons, with a return rate of approximately 1,000 (completed forms still occasionally arriving over a year later) to the offices of the PDF, who generously complied the data for us. For more in-depth study of the questionnaires with regard to our individual areas of interest we each used a random sample of 100 questionnaires for further analysis.

The Master's Group were aware early on of the importance of both 'consulting with' and 'communicating with' the profession throughout the project, from the RCVS to the GP veterinary surgeon working in practice. This was achieved by regular joint articles within the VT, by presenting reports to various meetings for RCVS and SPVS, by carrying out a profession wide questionnaire and by members of the group becoming members of various RCVS working parties as representatives for the Master's Group. Whenever possible all the group members strove to raise awareness levels of the work we were carrying out. As a

result of our of our eight individual MSc's with Middlesex University we produced together two documents for the Royal College of Veterinary Surgeons (RCVS) through SPVS. The first discussed the needs of the general practitioner it was entitled: -"Meeting the postgraduate educational requirements of the General Practitioner Veterinary Surgeon in the United Kingdom". The second set out our ideas for a qualification it was entitled: - "Proposed Structure for the postgraduate Certificate in Veterinary General Practice".

The Masters group thought, at the beginning, that the end of this learning process would end at the point when we were handed our Masters degrees. We have now come to realise that we may have reached the top of the highest hill we could see but in reality we are just in the foothills with the big mountains still to climb and conquer. Five of us decided to work towards a Work Based Learning Doctorate with the NCWBLP and PDF. This work has built on what we started for our Masters and will help continue the development of postgraduate reform within the veterinary profession.

An area we are still seeking to influence is the importance of the Certificate in Advanced Veterinary General Practice being competency based rather than knowledge based. Further research is required into validation assessment methods.

In my MSc research I found that 96% of Veterinary Surgeons read peer reviewed journals. I studied four such journals over two calendar years. This revealed that veterinary practitioners wrote only 6% of the articles. My research also indicated that 96% of Veterinary Surgeons highly valued articles written by practitioners. On consulting veterinary practitioners I found that only 7% had published articles in a peer reviewed journal. My master's project therefore showed a problem for the profession. The profession read peer reviewed journals and highly regards articles written by practitioners. However the journals only contained 6% of articles written by practitioners and only 7% of practitioners wrote such articles. I had unearthed a real flaw in the potential learning of veterinary surgeons, in particular practitioners. Continual Professional Development (CPD) has recently become mandatory for Members of the Royal College of Veterinary Surgeons

(MRCVS's). At the present time the requirement is for members to complete 105 hours in a three-year period. 30 of these hours may be home study of which reading peer reviewed journals is an integral part.

Do these journals contain the right material for CPD of practitioners?

The doctorate group had been formed to advance post-graduate education in the profession. I wanted to aid this advance. I decided to study the difficulty faced by practitioner researchers in publication. I saw a need for more publication of practice based research in the peer reviewed journals.

For the profession to develop in a more reflective manner these papers needed to be based less on hypothesis driven research, nicknamed curiosity-led research i.e. Mode 1 research and more on issue-led research i.e. Mode 2 research (Fillery-Travis & Lane 2006).

I could see a real need for change within the profession. I decided a doctoral project within the context of the group; studying post-graduate education would be worthwhile not only for me as a reflecting practitioner but also for the profession as a whole.

This project followed on naturally from my research for my MSc. I had already gained expertise in carrying out interviews in a small case study.

I had contact with the four, most commonly read veterinary journals, through their editors as I had carried out a small historical analysis. I knew the style and content to some extent of the four journals. I had contact with many veterinary surgeons both in practice and outside who publish research work in all four journals.

I have studied what competencies a veterinary practitioner needs to carry out in-practice research. Research competencies are designed to provide Veterinary General Practitioners with valid methods of systematic investigation into clinical and all other aspects of practice.

Veterinary General Practitioners benefit from carrying out in-practice research. It increases motivation by providing more challenging work. This improves job satisfaction and aids professional development. It goes hand in hand with the establishment of new methods by recording client feedback and establishing

Clinical Audit (CA). Practitioners can record day-to-day experiences to establish evidence for both surgery and medicine practices. If this evidence is published it will benefit other practitioners and ultimately more patients. To be truly worthwhile publication needs to be in a respected peer reviewed journal.

The traditional view was that veterinary practice researchers should be able to critically evaluate different types of research and research design. They also would need to know how to collect and analyse data. Obviously the use of information technology would be extremely helpful. Veterinary practice researchers like all researchers would need to identify and record the existing knowledge of the subject under investigation. They would have to name the objectives and protocols. They would have to accurately record their results. These would need to be discussed in the light of existing knowledge and conclusions would need to be drawn. The whole research would need to be recorded in a standard report for publication.

It is vital that the report identifies the relevance of the research. It should identify and deals with any obstacles encountered, and express coherently the values that influenced the research. This is hypothesis driven research. It is described as Mode 1 type research (Fillery-Travis & Lane 2006). However one author (Schon 1983) has showed that there are dangers in equating professional development just with problem solving by rigid application of scientific theory and technique. Many practitioners benefit from issue led research described as Mode 2 type research (Fillery-Travis & Lane 2006). However dissemination to a wide audience requires publication. This normally means that the veterinary in-practice researcher will need to conduct research, which follows approved codes of practice to ensure ethical, scientific and technical standards. The researcher will need to analyse and appreciate the effects of different perceptions, bias and prejudice in research design. Personal expectations and preferences will need to be acknowledged when reaching conclusions. The research must be relevant to practice. The results of Mode 2 research may be disseminated to colleagues and other groups. However for a larger impact the final requirement is for publication in a peer-reviewed journal. In a recent editorial in the JSAP the author (Ramsey

2007) comments on a study on middle ear disease; "While this study is not the 'pure' research of the kind favoured by the research councils and university authorities, it is important to veterinary practitioners".

Many eminent veterinarians consider research to be an integral part of veterinary practice. (Rossdale 1985) (Rossdale 2000) (Mair 2001) (Rossdale 2001) (Forbes 2001) (Forbes 2002) (Mair 2002) (Rossdale 2002) as do members of allied professions (Guillou & Earnshaw 2002) (Murie 2001) (Sarr 2001) (Enkin 1996) (Anderson 2001). Equally other veterinarians are less certain (Misselbrook 2002) (Urquhart 2002). This project hopes to decide on the competences that are required by a practitioner to carry out in-practice research. This project also seeks to reveal the attributes, which are needed by the individual practitioner so that he can structure his working life in order to carry out in-practice research.

I define in-practice research in this context to be an original investigation in order to gain knowledge and understanding. It will include work of direct relevance to clinical practice; scholarship; the invention and generation of ideas, images, performances and artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It excludes routine testing and analysis of materials, components and processes, e.g. for the maintenance of national standards, as distinct from the development of new analytical techniques. It also excludes the development of teaching materials that do not embody original research. (Shiach 2002).

This is a very wide view of in-practice research. To be really beneficial to the practitioner it needs to be more focused on discovery and less on verification, in order to answer the research question, "which competences are the most important to the general veterinary practitioner to enable him to carry out in-practice research and publish results in a peer-reviewed journal?" I will research how successful researching practitioners have accomplished in-practice research. I will study how practitioners have been successful in getting their results published. I will study why practitioners, who have carried out in-practice

research, have failed to get their results published in a peer reviewed journal and what they have done subsequently to this failure.

This project will also help practitioners if the competence to do research is included in the syllabus of the certificate in general veterinary practice (Blake 2002) (Molyneux 2002).

In order to guide those coming after me I will research into the training which undergraduates have received into performing in-practice research. I will also ask newly qualified veterinary surgeons what are their views on performing in-practice research. The RCVS has developed a programme for the first year after qualification. It is called the Professional Development Phase (PDP). It will be mandatory for 2007 graduates. In this programme they state that, veterinary surgeons will have acquired a wide scientific background by the time they first graduate. After graduation, this underpinning knowledge must be kept up to date and applied to the area in which the individual has chosen to work. The veterinary surgeon should therefore ensure that they maintain their knowledge and understanding of the following:

The sciences, on which the activities of veterinary surgeons are based.

Research methods and the contribution of basic and applied research to all aspects of veterinary science.

How to evaluate evidence. This gives a clear indication by the RCVS that there is an essential place for in-practice research in the 'tree of life long learning' for all veterinary practitioners.

Chapter 2 - aims and objectives

I intend to investigate the difficulties faced by practitioner researchers in publication. I specifically want an answer to the question "Why are so few articles written by practitioners in peer reviewed journals?" As a follow-up to this I want an answer to the question" Why do so few practitioners publish articles in peer reviewed journals?" After I have answered those two questions, I will be able to devise strategies to help practitioner researchers to achieve publication
These strategies may well include a call for a new peer reviewed journal for the profession. I will then have answered two more questions "How can I help practitioner researchers in publication?" "Does the veterinary Profession need a new peer reviewed journal?"
Therefore I will study the existing four most commonly read veterinary peer reviewed journals in the UK. These are the Veterinary Record (VR), the Equine Veterinary Journal (EVJ), the Equine Veterinary Education (EVE) and the Journal of Small Animal Practice (JSAP). I will perform an historical analysis over the ten-year period 1995 to 2004. This analysis will not only allowed me to make suggestions for future peer reviewed veterinary journals but also enabled me to locate successful practitioner authors. I will then carry out semi-structured interviews on the successful practitioner authors if they agree to help me with my research.
I will contact the editors of peer reviewed veterinary journals. I hope to carry out semi-structured interview on those editors.
Through the editors of these journals and through the editors of non-peer reviewed journals, I will contacted unsuccessful practitioner authors. I will carry out semi-structured interviews on them, with their agreement.
Lastly I will contact final year veterinary students and new graduates, with a view to further structured interviews .As the doctorate group we intend to meet on a regular basis. Our main aim will be to facilitate the development of postgraduate veterinary education in general practice, by helping to implement the new RCVS Certificate of Advanced Veterinary Practice (CAVP). However we also hope to

assist with the development of lifelong learning for the veterinary profession, by setting up and supporting groups of veterinary surgeons studying relevant areas within the structure of the proposed lifelong learning ladder. In order to help us in this task we will establish a resource for encouraging educational support that is accessible to all Veterinary General Practitioners. This resource will be electronic mail. It will be managed professionally by the PDF.

Within this frame work I personally will carry out an investigation of the difficulties faced by practitioner researchers in publication. The investigation will not only study the problems of carrying out in-practice research but also in writing up the results. The investigation will cover the problems faced by practitioners in getting publication of their work in a peer reviewed journal. Included in this study will be the thoughts and plans of the editors of veterinary peer reviewed journals. To cover all aspects of the problem my investigation will cover the hopes of newly qualified veterinary graduates and final year veterinary students. My purpose for such an investigation will be to increase the numbers of papers published by veterinary general practitioners in peer reviewed journals and to increase the number of veterinary general practitioners doing in-practice research and publishing their results in peer reviewed journals. To achieve these aims I will write a book to help veterinary practitioners carry out in-practice research and publish their results.

Chapter 3 - literature review

This literature review should provide a thorough analysis of all the relevant and up-to-date works concerning my subject of in-practice veterinary research.
It has developed thematically and addresses theoretical debates by critically and analytically reviewing the existing literature. The literature on veterinary in-practice research is sparse. I therefore have relied heavily on medical literature.
The presenter of the 1985 Sir Frederick Hobday Memorial Lecture (Rossdale 1985) maintained that veterinary practice; teaching and research had a common philosophy. He showed that Sir Fredrick Hobday combined the art and science of practitioner, research worker and teacher, the three basic areas of endeavour with which members of the veterinary profession are concerned. He showed that in his day this was possible, practical and acceptable to the profession and their clientele.
However he pointed out that in the thirty years since Sir Fredrick Hobday died, knowledge had broadened and new techniques of diagnosis and therapy had been developed. This had brought about a change in the structure of the profession. Graduates from the university veterinary schools had become segregated into those, on the one hand, who conduct research or devote their time to teaching and, on the other hand, those in practice. The barrier between *them* and *us* between academic and clinician had become stronger, higher and less readily negotiable.
He pointed out that The Royal College of Veterinary Surgeons (RCVS) has recognised the need for specialist status. Specialists are pre-eminently equipped to teach. Yet, in the future, many of these specialists will be in practice. Their expertise should, therefore, be harnessed for the benefit of the educational system. Equally specialists should be involved in research.
He defined research as an ordered process of acquiring new knowledge by investigations employing methods to test hypotheses. He argued that clinicians have a role in this process and the collection and collation of their observations form an integral part of research in practice.

He considered that investigating clinical problems leads to collaboration with full time research workers in university and institute departments of physiology and experimental medicine. He thought that clinicians receive particular benefit from this multidisciplinary approach and the consequent contact with experts.
He felt that there was a further reason for each member of the veterinary profession to be involved in teaching, research and clinical practice. Because our present day graduates are mainly selected on the basis of high intellectual capability. It was wrong to let many of them reach advanced standards of education only to be frustrated in clinical practice by a lack of opportunity to achieve standards which fulfil the aspirations their educational excellence leads them to expect.
Lastly he stated that specialisation must surely increase, rather than diminish the expectations of veterinary graduates and fulfilment of these expectations may not be found in practice unless changes in organisation and approach enable those who have ambitions in practice to attain those expectations.
One authority considers that the USA as well as the UK is seeing the increase in specialisation (Little 2001). He thought that the increase in referral practices might make clinics, run by veterinary schools become a thing of the past. Veterinary schools might become just tertiary educational facilities concentrating on teaching and research.
The editor of EVJ considered that clinicians have a duty to carry out research and publish their results (Rossdale 2000). He thought that research in practice should not be confused with experimentation and that clinicians should endeavour to discover *best practice* by comparing accepted treatments with more novel approaches. He thought that they should record and collate clinical details to test hypotheses, which is the essence of Evidence-Based Medicine (EBM). He stated that the welfare of the individual animal, or the group must be paramount for the clinician but that did not prevent the trial of different therapies in a clinical audit cycle.
The editor of EVE thought that effective veterinary clinical practice has always drawn upon both science and art (Mair 2001). However he considered the modern

serious movement towards EBM required a large body of high quality patient-centered research to be made available to veterinarians. Another authority considered that veterinarians should be willing and able to access and critically appraise the quality and applicability of clinical trials (Keene 2000). The editor of EVE considered the main problem in veterinary medicine was that there has been a very limited number of high quality Random Controlled Trials (RCTs) (Mair 2006). He thought that naturally finance was a factor in veterinary medicine, as the returns available to the pharmaceutical industry were extremely limited compared to human medicine. However he judged that there was a lack of RCTs in human surgery as well. He stressed that to avoid a label of experimentation all RCTs have to be ethically acceptable so there had to be a clinical equipoise with a certain level of doubt about an existing method for a RCT to be ethically justified. He observed that the development of veterinary EBM had been slow. It therefore was vital that the results of studies were published.

One medical colleague thought that many aspiring authors, particularly surgeons in his experience, question whether their idea of writing a paper about a certain topic of personal interest will be publishable (Sarr 2001). He thought they were correct in being hesitant as ideas were plentiful, but formulating such ideas, which would be worthy of publication would be difficult to bring to fruition. He thought however that young or naïve authors should not be discouraged from 'writing up' a project but rather should use certain guidelines to help focus the development of ideas and realistically define publishable concepts. He stated that there are many types of submission. Often the distinguishing features of each are not clear cut and the naive author would benefit from advice of a more experienced colleague.

However to help aspiring authors he gave basic criteria for each type of submission. This author stated that breaking down articles into categories was not intended to discourage prospective authors, but rather to provide guidelines and criteria to prevent the inevitable discouragement of a negative review. He thought many submissions were doomed from the start because of either poor planning or naivete, and both were avoidable. His advice for the new author was

to obtain the opinion of a seasoned author, perhaps not before beginning to research and developing an idea, but certainly before committing too much time and effort into collecting data and writing a manuscript for potential submission. He was of the opinion that good ideas that were well developed were published but bad ideas were rejected.

One medical author (Anderson 2001) asks the question. "Assuming a practitioner has a good idea, how does he or she get started?" His answer is: -

First he suggests that the author gathers together all of the reading matter (original scientific articles, published abstracts, review articles and text books) that he or she needs, along with materials concerned with the investigations (grant applications, ethical submissions and study data). He states that it is unimportant if this is done electronically or with paper. However he feels the routes to further information need to be established.

Secondly he advises that the literature itself be tamed, in a similar way to this literary review. He states that the prospective author has to ask the questions of each article. Why has the study been done and how has it been conducted? Has the hypothesis been clearly stated and is it of real significance? What population was studied and was it large enough? What intervention and outcome measures were used and what further studies need to be performed?

He advises that an author needs to prepare a draft. However he suggests it is often easier to start with a flow chart with arrows leading from one point to another or to stylise the information in a hub and spoke fashion around a central theme. Ultimately, he concludes that it may simply consist of a list of points, which then need to be included in the final document. From this draft outline, sections of the paper can be started. He suggests It is best to start with the easiest sections first rather than trying to go through the paper in a fixed order of introduction, methods, results and discussion. Methods and results are generally easier to write than the other sections. Tackling these may help to overcome the so called 'writer's block'.

Hopefully this will help the author to develop a flow of ideas, or a story, enabling the writer to convey a logical train of thought to the reader.

The editor of the EVJ advises that the bottom line of writing a paper is to communicate with the readership; and, in particular, with one's colleagues ranging from clinicians to full-time research workers, all of whom may or may not have an in-depth knowledge of the subject (Rossdale 2001).

Nonetheless, this editor suggests that the aim should be to communicate in such a way, that your paper is read by as wide an audience as can be persuaded to devote time to read it. He reminds writers that reader's time is valuable. Readers need to prioritise time for studying into a life already over-crowded by priorities. Authors need, therefore to bear in mind to write in short sentences with paragraphs of reasonably restricted length. They should write what they want to communicate and not to be discursive or digress on the message they wish to impart.

This editor states that there are fairly rigid formats adopted by veterinary journals based upon many years of experience: and to which authors are advised to adhere.

Headings of a primary, secondary and tertiary nature should be placed in order to clarify the text into sections. These can then be readily understood and their content appreciated by the reader.

He thinks it is often helpful to a writer to construct the headings before embarking on the text. The author is then in control of the text rather than letting the text lead the author. Some authors may let it 'all hang out', i.e. construct the text as content comes to mind and then draw upon this (usually discursive) account to construct the text under the appropriate headings. This is a somewhat disorderly approach and can be avoided the more practice one has in writing.

Yet another medical author asks that when the completed manuscript – The Final Product – lies in front of you on your desk. What happens next? His advice is not be tempted to cram it rashly into an envelope and bear it with speed to the nearest post box (Murie 2001). This authority considers a moment's quiet contemplation at this point may avoid needless delay and embarrassment at a later stage when referees and editors uncover obvious, simple faults.

He advises authors to sit down with the manuscript and the appropriate 'Instructions to Authors' and then to check your work carefully against the Instructions.

He suggests that should your efforts fail to gain editorial approval at the first port of call, you may select a journal of second choice. He stresses the need to remember to once again sit down with the new 'Instructions for Authors'. You may also have to change the language i.e. English style or American style.

If you are offered the opportunity to resubmit after revision, this experienced author advises you to deal with all of the points made and state in a covering letter what exactly has been done.

This author points out that after acceptance, you will receive page proofs of your paper before its eventual publication. These show the layout of your text and illustrations, and are sent to authors for careful checking; delay is to be avoided. Although the editors and internal proofreaders will also scrutinise the work at this stage, input from authors is essential. He suggests that you must check that what you want say has come out clearly and that no alteration (by you or by the editors) has inadvertently distorted your original message.

He states that if proper care has been taken at the manuscript stage, the number and size of changes at proof stage will be very small indeed. He considers that proofs do not lend themselves to major alterations and are not intended for that purpose.

He observes that the true 'final product' is, of course, your article published inside the pages of a prestigious journal and to reach this stage you must work with speed and with care.

To clarify the context of this research I have studied the literature on evidence based medicine (EBM). There is no clear division between EBM and in-practice research. However I consider these are the five essential steps which are needed for EBM:

1. To convert our informational needs into answerable questions (i.e. to formulate the problem).

2. To track down, with maximum efficiency, the best evidence with which to answer these questions – which may come from the clinical examination, the diagnostic laboratory, the published literature or other sources.
3. To appraise the evidence critically (i.e. weigh it up) to assess its validity (closeness to the truth) and usefulness (clinical applicability).
4. To implement the results of this appraisal in our clinical practice.
5. To evaluate our performance.

EBM requires you not only to read papers but also to read the right papers at the right time and then to alter your behaviour (and, what is often more difficult, the behaviour of other people) in the light of what you have found. Critical appraisal should be given due importance. If the writer has asked the wrong question or answers have been sought from the wrong sources, the value of the study you have been reading and appraising is limited for your use. I found there are three levels of reading. There is browsing, in which we flick through books and journals looking for anything, which might interest us. There is reading for information, in which we approach the literature looking for answers to a specific question, usually related to a question we have met in real life. Lastly there is reading for research, in which we seek to gain a comprehensive view of the existing state of knowledge, ignorance, and uncertainty in a defined area. On reflection on my previous reading I had wasted a considerable amount of time and missed many valuable articles by simply searching at random. I feel the logical end point for EBM is not only to provide best evidence for ones own clinical actions but also to influence others. Therefore publication must also be a goal. There is no doubt that EBM in the veterinary field is being practised more widely. There is a definite cross over with in-practice research. Equally there is a link up with Clinical Audit (CA), which is being studied in the veterinary field by Bradley Viner, who is one of the SPVS doctorate group. However I have tried not to digress too far into either EBM or CA in my work. Just as papers describing in-practice research are rejected, so are papers describing EBM.

The literature shows that there are common reasons why a paper is rejected for publication. The study was not original or did not examine an important scientific issue. Perhaps a different study design should have been used, as the study did not actually test the author's hypothesis. Maybe practical difficulties led the author to compromise on the original study protocol. Possibly the sample size was too small with the statistical analysis incorrect or inappropriate for the author to justify the conclusions. Perhaps there were inadequate controls. There may have been a conflict of interest.

Peer reviewers need to decide on these issues whether the paper is in-practice research or EBM.

As stated at the beginning of this review the papers concerning the difficulties faced by practitioner researchers in publication are very few in the veterinary field. This is also apparent in the textbooks written on the subject. There are several in the medical field but none in the veterinary field.

The thrust of my work is to help more veterinary practitioners to publish in peer reviewed journals. If the editor or reviewers reject their manuscript, this creates an even higher hurdle for them to overcome.

Chapter 4 - methodology

Historical Analysis

The end result of this project is to have paved the way for more practitioners to publish the results of in-practice research. First of all it was logical to study where they can publish. To do this I needed to study the veterinary peer reviewed journals. Previous work (Duncanson 2003) had revealed that 96% of veterinarians in the UK read peer reviewed journals. This work also revealed that the most commonly read journals are the Veterinary Record (VR), the Equine Veterinary Journal (EVJ), Equine Veterinary Education (EVE) and the Journal of Small Animal Practice (JSAP). So I decided to carry out an historical analysis of these four journals over the last ten years. These were four pieces of detailed research. Each of the four journals was analysed. The data collected was primary data, which has never been collected or analysed before. I was the originator of the research and therefore responsible for quality control and the methodology

If I was going to carry out an investigation of the difficulties faced by practitioner researchers in publication, I needed to find these practitioner researchers. A careful analysis of all the manuscripts would reveal the place of work of the authors. I knew from past experience that some manuscripts would have multiple authors and some just single authors. I then examined the authors of the papers and the short communications. I checked their addresses. I classified any papers, short communications or case reports, which had one or more authors who were at a veterinary school, research institute, government office, or commercial company, as written by a non-practitioner or non-practitioners. At the time none of the journals made any record of the input of each author when they were multiple authors (The EVJ and EVE have recently instituted a policy of author input declaration). Therefore I had to classify many papers as written by non-practitioners even when there were some practitioners listed as authors. The inference was that the greatest input was from the non-practitioner author. I recorded all the names and addresses of the practitioner authors with the title of

their paper or short communication and its reference. I recorded the author's address at the time of writing the paper. I was not concerned if an author's address had altered after writing the paper. It was the fact that the author wrote the paper while he was in practice, which was important. I termed these authors "successful practitioner authors". Obviously there were less successful practitioner authors than the number of manuscripts as many practitioner authors had written multiple manuscripts.

I also needed the names and addresses of the unsuccessful authors, who were practitioners, to get a balance for my enquiry. Initially I thought I could obtain the names of the unsuccessful practitioners who had failed to get articles published in the four journals in the last ten years, from the editors of the journals. However for ethical reasons this was not possible. I had to resort to other methods, which are described below.

When I presented my ideas for my work based doctorate project, the panel advised, that as I was performing such an in depth study of the journals, I should also study the contents of the papers from a species and body system perspective. They thought it would be a very useful study to see if there was a need for a change in format of the journals, or indeed for a new peer reviewed veterinary journal.

Therefore my historical analysis included a study of the different types of manuscripts. I listed the species and body system of each manuscript.

I have acknowledged the bounds of my rationality. I only studied the four peer reviewed journals, VR, EVJ, EVE and JSAP. As my previous research (Duncanson 2003) indicated that these were the most commonly read peer reviewed journals. The ten-year period from 1995 to 2004 was picked, as it was the most up to date. I started collecting my data in 2005 so I could not have completed 2005. I could triangulate my findings with the snapshots of analysis of the years 1998 and 2003, which I carried out in MSc thesis. I needed a full ten-year period to see 'The Big Picture'.

Historical Analysis of the Veterinary Record (VR)

I have been a member of the British Veterinary Association (BVA) for over forty years and have received their weekly publication, the VR. The VR is the premier peer reviewed journal in the UK. It is the most commonly read peer reviewed journal in the UK (Duncanson 2003). It was founded in 1888. It is devoted to all species in all parts of the world. It contains editorial, news, reports, abstracts from other journals, book reviews, a gazette, letters, peer-reviewed papers and peer-reviewed short communications. My study included the 520 copies which were published in the ten years, 1995-2004. Each year is divided into half yearly volumes. I therefore have studied 20 volumes, numbers 136 -155.

I examined the titles of both the papers and the short communications. I recorded the species namely:

Horses, Donkeys, Cattle, Sheep, Goats, Pigs, Dogs, Cats, Rabbits, Small Pets, Camelids, Reptiles, Fish, Zoo animals, Wild animals found in the UK, Wild animals found world wide, Marine mammals, Poultry and Others.

As with any analysis there were anomalies. Articles on farm ruminants, which included cattle and sheep, were classified under cattle. Articles on dogs and cats were classified under dogs. These difficulties only occurred very rarely. Seven times in the total of 1631 papers and 1519 short communications.

I recorded the main body system covered by the article as suggested by a previous author (Rossdale 2002) namely: Cardiovascular, Chromosomal, Gastro-enterological, Neoplasia, Neurological, Orthopaedic, Respiratory and Others.

After analysing one volume of the VR it was found that there were a large number of 'Others' for Cattle and Dogs. To try and reduce this, an extra category of Reproduction was added for these two species. All the volumes were then examined in this way. If two systems were included in a single article the article was classified by the most important from a conclusion point of view. An example would be a short communication describing the causes of respiratory disease in pigs. Neoplasia might be one rare cause of respiratory disease. The article would therefore be classified under Respiratory rather than Neoplasia.

On further reflection, analysis into body systems is extremely complex. The method chosen was very well suited for a single species journal. There were no other methods recorded in the literature for such an analysis. The fine-tuning of adding an extra category of reproduction for cattle and dogs certainly helped. However to get uniformity I needed a single system. No other system seemed to fit either all species or all journals.

Historical Analysis of the Equine Veterinary Journal (EVJ)

I have been a member of the British Equine Veterinary Association (BEVA) for 30 years. Initially their journal was published by the VR. However in the last 22 years it has had a separate publisher. The EVJ is the premier equine journal in the English speaking world. It has the highest impact factor of any single species journal. It has an editorial and the occasional letter to the editor. However it is primarily a scientific peer reviewed journal, any news or political comment by BEVA is sent out separately in a newsletter. I receive six copies of the EVJ annually. In certain years the EVJ has an extra copy on some particular topic of interest e.g. colic. I included these extra copies in my investigations as they contain peer-reviewed papers. In total therefore I analysed 64 journals published by EVJ in the ten years 1995-2004. They were divided into ten volumes numbered 27-36.

The journal is dedicated to equine medicine and surgery. I recorded the few articles on donkeys separately from horses. There were no papers on Zebras, the only other equine.

I recorded the peer-reviewed articles under three headings of papers, short communications and case reports.

I divided the contents under similar systems headings as the VR namely: Cardiovascular, Chromosomal, Gastro-enterological, Neoplasia, Neurological, Orthopaedic, Respiratory and Others.

I then examined the authors of the papers, the short communications and the case reports. I checked their addresses. I classified any papers, short communications or case reports, which had one or more authors who were at a veterinary school, research institute, government office or commercial company,

as written by non-practitioner authors. I recorded all the names and addresses of the practitioner authors with the title of their paper, or short communication, or case report and its reference.

The EVJ in the last 18 months has a special feature. At the end of each paper, short communication or case report, is recorded the date the article is received by the editor for publication and the date it is accepted. I recorded all these dates on an excel spreadsheet together with the date that the paper was actually published. After I had completed my analysis at the beginning of 2005 the editor of EVJ has brought in a requirement that multiple authors must state the amount, and the type of input given by each author. It was not possible to gain this information for the years of my study.

Historical Analysis of the Equine Veterinary Education (EVE)

EVE is a second publication, which I receive from BEVA. It is peer reviewed but it is more practitioner based. There are six copies each year. I studied the 60 copies of Volumes 7-16 published between 1995 and 2004. I recorded the details of the species and anatomical systems in a similar manner to the EVJ, as well as the number and addresses of the successful practitioner authors.

Historical Analysis of the Journal of Small Animal Practice (JSAP)

This journal is peer reviewed and has the same publisher as the VR but has a completely separate editorial board and circulation. The board is responsible to the British Small Animal Association (BSAVA). The members of BSAVA receive this journal monthly. I am a large animal/ equine practitioner and therefore am not a member of BSAVA. I do not receive the JSAP. I therefore went to the library at the Cambridge Veterinary School to study this journal. I examined 120 journals, volumes 36-45, which covered the ten years 1995-2004. I assumed that this journal would cover the whole spectrum of small animal pets. Therefore I was prepared to record the whole range of species as I did for the VR. However this was not the case. The very large majority of papers and case reports (there were no short communications) were on dogs and cats. The few exceptions were on rabbits and other small pets. These I recorded separately. There were eighteen combined papers or case histories on dogs and cats. These I classified

as dogs unless actual numbers were given, which showed the majority of patients to be cats. I recorded the contents of the papers and case histories under similar headings, of organ systems, to those used in the VR.
I noted the titles of the papers and case reports written solely by one or more practitioners. I recorded their names and addresses.
The JSAP has news items from BSAVA, an editorial and letters to the editor. These are outside of the remit of this project.

Case Studies

My main project was an investigation of the difficulties faced by practitioner researchers in publication. To carry out this investigation I had to study practitioner researchers. I had the names and addresses of 215 individuals, who appeared to have successfully published one or more manuscripts in a veterinary peer-reviewed journal in the last ten years.
I had to decide which research approach or methodology I was going to use. There are six main research approaches appropriate for work based projects: action research; case study; experiments; survey; ethnography and soft systems. The key element of action research is that the researcher involves as many of the work group as possible to attempt to change the system and then monitor results (Kember 2001). The five members of the doctorate group, which included myself, regularly carried out action research to bring about change within in the field of postgraduate education. However my specific part of the study of postgraduate education was in-practice research. Action research was not appropriate for 215 successful authors in a wide geographical area. Such a wide focus would cause confusion.
A Soft System Methodology (SSM) would be difficult to use as there is no real client or problem owner. A conceptual model would be very difficult to define
On the other hand a case study approach was much more appropriate (Yin 1994). I needed as broad a base for my inquiry as possible. I was asking 'why' and 'how' questions which need explanation. A survey would therefore not be appropriate. It would have limited the number of questions and hence the depth of answers I would receive. I do not want to carry out just data collection

(Stoecker 1991). Other research methods would not be able to give such qualitative evidence. (Schwartz & Jacobs 1979).

I could not use ethnography as an approach. There were no coherent groups in which I could be a participant observer. It could be argued that I am a successful practitioner author. However with a group of 215 this was not a practical option.

An historical analysis for this part of my project would not useful as I was focusing on contemporary events (Little 2001). Equally it should be noted that my study would not have any control over contemporary events. In my study I had to guard against the danger of equivocal evidence or biased views, providing little basis for scientific generalisation. I had to curtail the time span (Bennett 2002).

I could not carry out an experiment as I was focused on too many variables and this would have brought the act of research out of context.

The chief limitation on the value of case study is the difficulty of transferring the evaluations to other situations. However I was going to side step this limitation by performing five separate case studies.

The five groups, giving multiple sources of evidence, taking part in five separate case studies were: -

1. The successful authors, who were practitioners, were able to provide data on the difficulties of carrying out research in a practice situation. They also could throw light on the difficulties of publication. The data showed what outside help they needed.
2. The practitioners who had failed to have their articles published were able to provide data on what outside help would have enabled them to not only to have carried out more useful research but also to have their article published.
3. The editors who were able to provide data as to why and how the papers are selected.
4. The final year veterinary students who were able to give me their insights to their futures in practice.
5. The newly qualified veterinary surgeons that were able to show me how they felt their undergraduate tuition had equipped them to carry out in-practice research.

I had studied in some depth both during my MSc and subsequently, at Middlesex University the use of both structured and semi-structured interviews as a data-collecting tool.

The raw data from semi-structured interviews has to be recorded and analysed before interpretation (Yin 1994). The analysis requires the use of both qualitative and a quantitative techniques. On the other hand the data from structured interviews is more straightforward and only requires quantitative analysis (Ajetunmobi 2002). In this doctorate project, I spent a considerable time working out what questions I wanted to ask the authors. I then piloted the interviews on five of my veterinary colleagues to insure that the questions were readily understandable. These were carried out face to face. The first structured interview is shown in Appendix J1. As a result of these interviews I changed the protocol slightly to clarify the questions and to obtain more data. The final protocol is shown in Appendix J2.

As there were 215 interviews to carry out, I decided I had to use a mail shot. I checked all the successful authors, who were members or fellows of the Royal College of Veterinary Surgeons (RCVS). I recorded their most modern addresses from the register of Members 2004. I also recorded their qualifications.

I wrote to all "successful practitioner authors" from all four peer reviewed journals (See Appendix I). I enclosed the modified protocol (See Appendix J2). I enclosed a stamped return envelope to all the addresses in the UK. I encouraged all the other authors outside the UK to reply by email. It could be argued that such an approach brought in an element of bias as non-UK residents, who did not have access to email, would be at a disadvantage. However in this electronic age with professional authors such a bias is unlikely to be real.

When I received a reply I recorded the information on to an excel spreadsheet. Each author was given a number. The original reply was stored in a safe place. If the informant indicated that he/she did not understand a question, I emailed him/her with a more full explanation. If they replied I edited their protocol. If the informant just left an answer blank, I recorded that as a blank. If the informant did not give an email, (which I requested on the protocol) I did not follow up any

queries. From that moment the informant was only recorded as a number to protect anonymity. In this way because I carried out all the interviews myself and collected all the data I could make sure all the ethical conditions were fulfilled. Obviously to obtain the quantitative data for comparison I had to ask almost the same questions to the unsuccessful practitioner authors. As I stated earlier recruitment was not so straightforward as I had imagined.

The editors of the four peer reviewed journals (VR, EVJ, EVE, JSAP) for ethical reasons were unable to give me the names and addresses of unsuccessful practitioner authors who had had manuscripts returned. However the editors were happy to have a letter published in the VR (See Appendix B). To try to get a wider coverage I had a letter (See Appendix C) published in The Veterinary Times, a non peer reviewed veterinary news paper sent out weekly free to all veterinary surgeons (approximately 14000 copies are sent). Yet again I did not have sufficient unsuccessful practitioner authors. I asked the editors of peer reviewed journals to send out a letter to unsuccessful practitioner authors (See Appendix D).

The Journal of Small Animal Practice (JSAP) devoted a whole edition to practitioner authors. Bradley Viner, one of our so-called SPVS Doctorate group was asked to write the editorial. He kindly included a plea for more unsuccessful authors to come forward (See Appendix E). Through Paul Manning, editor of the SPVS Bulletin, another of our group, I managed to have an article published once again urging authors to come forward (See Appendix F).

DEFRA funded a course at Cambridge, run by Mark Holmes, to help practitioners to carry out in-practice research (See Appendix G). I attended the course hoping to meet unsuccessful authors. In reality the majority of the participants were already on my list as successful practitioner authors. To gain further experience I attended a seminar at The Royal College of Veterinary Surgeons (See Appendix H).

If any unsuccessful practitioner author contacted me, I carried out a semi-structured interview (See Appendix K). I obtained information from all the unsuccessful authors I managed to locate, either by mail or email. I analysed the data in the same way as the successful authors. Once again I allocated each

author a number and from then on anonymity was preserved as I collected and analysed all the data myself.

I contacted the editor and the assistant editors of the four peer-reviewed journals, included in my historical analysis at their publication offices. I carried out a semi-structured interview on each of them (See Appendix L). The editor and two assistant editors of the VR were kind enough to grant me a four-hour interview.

On completion of my interviews with the editors and my historical analysis of the four peer-reviewed journals, VR, EVJ, EVE, and JSAP, I decided to ask seven further questions.

1. Do you consider it is a good idea to publish arrival and acceptance dates for manuscripts?
2. Do you think it is a good idea to publish a list of peer-reviewers?
3. Do you feel the name of the author should be kept from the peer-reviewers?
4. Do you think with multiple authors, they each should declare their input?
5. Does the species of animal affect the chances of publication?
6. Does the principal body system described in the manuscript affect the likelihood of publication?
7. Does the number of cases influence publication?

I felt I needed to obtain more information from editors, so I contacted other peer reviewed veterinary journals, namely, The Veterinary Journal, The Journal of Veterinary Dermatology, and The Journal of Veterinary Ophthalmology.

The questions were the same I had initially asked of the other editors.

All the editors were given a number and all the data was collected and analysed by myself to protect anominity.

I have approximately 15 veterinary students doing Extra Mural Studies (EMS) with me in practice every year. I asked them for their views on their training for in-practice research (See Appendix M). I carried out these structured interviews myself face to face. I was aware that there was a bias in this selection so I contacted further students when I attended the Final Year Seminar organised by SPVS in Lancaster in September 2005. I also carried these interviews out myself face to face.

As I had the email addresses of the EMS students from 2004-2005 I contacted them to canvass their views as new graduates (See Appendix N). I taught at the New Graduate Equine Dentistry Course at Newmarket in October 2005. I included these new graduates in my case study. All the new graduate structured interviews were carried out by email.

I did not approach the case studies with a preconceived notion. My interview data was not cold. I took care that the data was not used out of context. The quantitative data was rigorously analysed.

I have organised this data so that comparisons, contrasts and insights have been made with the aim of finding the meaning.

I have continuously at monthly meetings with the SPVS Doctorate group used action learning to enhance my research skills. I also used these meetings to sound out my colleagues on some of my contrary findings. They offered alternative explanations for these findings. They helped me to anticipate problems and kept me focused on the main thrust of the project.

The semi-structured interviews provided a good depth to my data, as I obtained both qualitative as well as quantitative answers. I simply recorded the data, so analysis was relatively straightforward. I collated the information into categories and then analyse them for similarities, and differences within groups.

I felt my case study approach was robust enough to make generalisations with the large number involved. Particularly with the successful practitioner authors when my data was drawn from 95 veterinarians out of a possible 215.

The data from the editors was even more robust with 11 out of a possible 12.

Criticism might be levelled at the small number of unsuccessful practitioners. The possible total is unknown. It might possibly be that eight was the total. Their recruitment was intensive, so it is certain that these eight were 'key informants'.

The numbers of final year veterinary students and new graduates were adequate. There was some bias as half of each group had taken the trouble to attend events organised by SPVS or BEVA. They were definitely 'key informants'. I knew all the others as they had completed EMS with me. However

it was a total number. None were excluded. The numbers of 48 and 40 were very significant out of a possible 540 for each group.

I was able to compare three groups of veterinary surgeons. I had my sample of successful practitioner authors and my sample of unsuccessful practitioner authors, together with the RCVS Manpower survey 2005.

It should be remembered that I have carried out previous research on this topic (Duncanson 2003). I also have carried out in-practice research and had several papers and short communications published in the peer reviewed veterinary journals. It might therefore be considered that I am an insider researcher. This is indeed true, as I was one of the 95 successful practitioner authors. However such a status did not influence how I obtained the data nor how I analysed the results.

Writing a book.

This book was written on completion of the majority of my research. I used the results of the historical analysis and findings of my case studies. The draft of my book appears in appendix S. The title of the book is likely to be "Publish and be praised". The likely publisher is Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ.

Chapter 5 - project activity and findings

Introduction to historical analysis

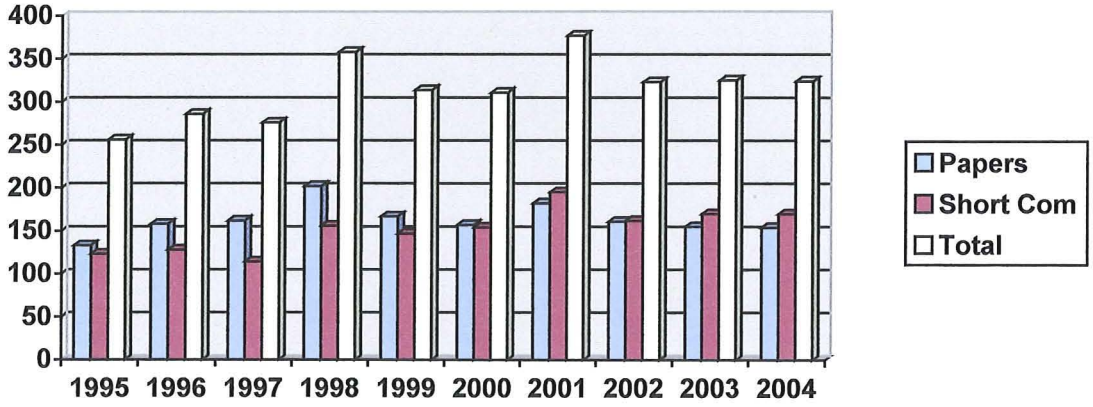
The historical analysis was carried out to ascertain whether there were veterinary peer reviewed journals available to accept manuscripts prepared by practitioners, who were carrying out in-practice research. Considerable detailed analysis had to be performed on the four most commonly read journals to see if they had the species and body system content which was required by practitioners.

The style and ethos of each journal was reviewed over a ten-year period. The authors were analysed. The types of articles were studied. The hoped for readership was estimated. The groundwork was prepared to see if a new veterinary peer reviewed journal was required.

Historical Analysis of the VR

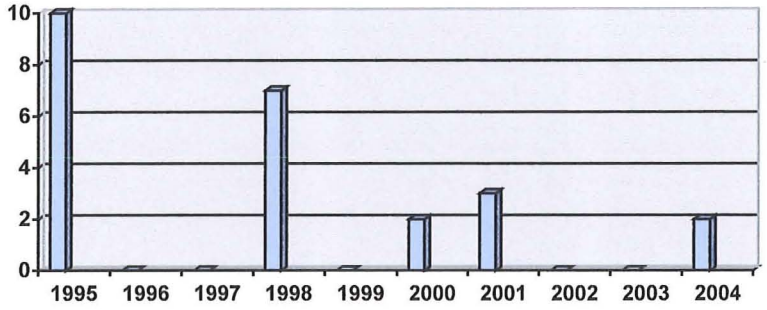
In the ten years of study 1995-2004 there were 520 copies of the Veterinary Record (VR) divided into 20 half-yearly volumes 136-155. In total there were 1,631 papers and 1,519 short communications. Both the papers and the short communications are peer reviewed. There were therefore 3,150 peer-reviewed articles. There was a fairly even spread over the ten years. As shown in the table and chart below

Year	Papers	Short Communications	Total
1995	133	123	256
1996	158	128	286
1997	162	114	276
1998	202	156	358
1999	167	147	314
2000	157	154	311
2001	182	195	377
2002	161	162	323
2003	155	170	325
2004	154	170	324
Total	1631	1519	3150



The total number of articles each year shows a 27% rise in the ten years from 256 to 324. This rise is fairly steady with two big years 1998 and 2001. There was an increase in the number of papers in the first six years and a rise in the number of short communications in the final four years.

There were two papers written by practitioners in the ten years and 24 short communications written by practitioners in the same period. Ten were written in 1995, seven in 1998, two in 2000, three in 2001 and two in 2004.
The chart below shows a decline.



One practitioner author wrote two short communications and another three. Four short communications had two authors. Thus there were a total of 23 successful practitioner authors. The number articles written by practitioners are too small to analyse statistically. However there is definitely no sign of an increase.
The analysis of the papers and short communications into species and systems was complex. It requires eighteen sides of A4 to show the full spreadsheet. The panel suggested this analysis, when the methodology for this project was agreed. There is a large amount of data, which on reflection is not relevant to the main project. However it may well be useful in the future so I have recorded it all in Appendix RO. The veterinary profession, like other professions, in the UK, as in other countries, is changing at an increasing rate. However recent research (Muckle 2003) in the UK indicates that within the last thirty years, the concerns of veterinary surgeons and practising veterinary surgeons in particular have tended to repeat themselves. This is seen by the topics highlighted by the editorials in the VR, which is the most commonly read peer reviewed journal in the UK (Duncanson 2003). Veterinarians read this journal all over the world, particularly in the English speaking countries and in Europe. The historical analysis shows some changes in scientific content. These tend to be gradual and subtle, except

where animal health issues are given media prominence. These issues may be important as there are zoonotic implications e.g. BSE (Mad Cow Disease) or there are massive disruptive, expensive effects e.g. FMD (Foot and Mouth Disease).
The VR is the voice of the British Veterinary Association (BVA) which might be described as the veterinary trade union. However it is by no means the voice of the profession in the UK. Also the editorial staff have a large amount of editorial freedom from the hierarchy of the BVA, particularly regarding the scientific content.

The peer-reviewed section of the VR was studied in depth for the last ten years and revealed that there was a good balance between the numbers of papers (1631) and short communications (1519). The trend in numbers was up-wards with an increase of 27% between 1995 and 2004. This compares very favourably with 14 other major biomedical journals, which showed only a 50% rise in the number of articles over a period of thirty years (Carlsson et al 2004). The number of species represented was very diverse. There is no editorial restraint on the species of animal represented in an article. Articles on cattle were the most numerous, which is beneficial to the veterinary profession in the UK because there is no dedicated peer-reviewed journal for cattle. The next most numerous was the 'others' category. This is extremely diverse. It includes rabbits and small pets. There is no dedicated peer-reviewed journal to these animals and yet they are playing an important role in the lives of children in the UK. The VR is providing an important role, which is not provided by the JSAP. Equally cage birds and psittisicines, which are very important for older members of society, are well represented. Articles on poultry are numerous, in keeping with the important role of these animals as a major food source. The articles on wild animals both in zoological gardens, in the wild in the UK, and in the wild in the rest of the world, are numerous in the VR. The VR is providing a vital service to the veterinary profession world-wide. It should not be forgotten that marine mammals feature highly. Articles on reptiles and fish are represented filling a gap in the availability of peer reviewed journals. There are over 10,000 camelids in the UK, and the

numbers are increasing. Articles on this species are seen more commonly in recent years. Lastly there are general articles seen in the VR on genetics, statistics, manpower surveys etc. From the aspect of species diversification, the VR can not be faulted. Manuscripts on BSE and FMD are obviously very numerous. However considering their importance the VR is fulfilling a vital role. At the present time there are no dates published by the VR when manuscripts are received and then accepted. However the editor is in favour of such a system, which appears to work well in the EVJ. The editor is also in favour of a system of author declaration so that the editor is aware of the input of each author. The VR also has editorials, news items, letters, advertisements etc but these are outside of the remit of this thesis. The VR has a high impact factor, with a very wide coverage of scientific content. The large spread of species represented is awesome. Its critics would question its relevance to the general practitioner. However I have come to realise how important a broad base of knowledge is to a practitioner. Admittedly if a practitioner wants to learn a specific skill e.g. cheek tooth removal in a standing horse, the VR is not the instrument required for that type of learning. This type of learning needs to be obtained from the VR's subsidiary, 'In Practice' which, because it is not peer reviewed, was not covered by my research. On the other hand there is a strong movement in the profession to improve our consultation skills (Manning 2003). The VR is providing a vast amount of factual information to the practitioner, which will enable him to not only to make a diagnosis but also to convince the owner of the validity of that diagnosis. This knowledge will give practitioners more general up to date information in their consultations.

The historical analysis of the VR has brought back memories of the BSE crisis. The clinical examination of a cow with neurological signs was often a daily or even twice daily occurrence but the explanation to the client whether farmer, hobby farmer or horse owner was required many times throughout the working day.

The scientific knowledge gleaned from the VR regarding the high infectivity of the Foot and Mouth virus was constantly useful during my work in Cumbria during the FMD crisis. I can reflect that without that learning my approach would have been entirely based on my previous experience in Africa between 1966 and 1974, which although extremely useful, was not up to date nor valid in the situation in the UK. Throughout the crisis and since then the VR has provided a constant stream of papers and short communications to refresh my learning and also to update that learning.

Knowledge is power. There is no doubt that the VR brings knowledge. The busy practitioner, with his overloaded daily schedule may not initially appreciate this knowledge. There may be criticism of an article on the rare pink pigeon in Mauritius. However such widespread articles on avian species stand the general practitioner in good stead to field the endless questions from his clients on "bird 'flu".

Veterinary practitioners have no crystal ball to view the future. It is hard to predict a new crisis. They may be:

- Diseases which only affect one species e.g. swine fever,
- Diseases which cross from a wild species to a domestic pet e.g. dolphins spreading distemper to dogs,
- Diseases which cross from a wild species to man e.g. rabies from the bat to a zoologist,
- Diseases which cross from a domestic species to man e.g. *E coli* 157 from cattle to man,
- A pandemic which may effect many wild species, domestic species and man e.g. avian influenza.

The VR has to keep updating our knowledge so veterinarians are ready for every eventuality.

My historical analysis revealed that there is a very wide coverage in the VR of body systems. My analysis, by definition, has tended to group these under headings to try to reveal a pattern. However on reflection I can see the value of

such a wide and varied representation. The generalist needs a wide coverage. The specialist needs articles on his specific discipline.
One of the reasons for my historical analysis was to measure to input of papers written by practitioners. These were lacking in any real numbers. This is the real criticism. Initially I thought the paucity of practitioner authors was a severe detriment, as my previous research (Duncanson 2003) had reveal the high esteem held by veterinarians for practitioner written manuscripts. However on reflection, although the VR is the obvious place for "Mode 1", often nicknamed 'curiosity-led research', it is not the likely vehicle for "Mode 2", 'issue-led research' (Fillery-Travis and Lane 2006).
In-practice research can be of the "Mode 1" type i.e. similar to academic research. This research can then be written up and published in a similar way to academic research. The VR is an ideal place for such work to be published. There is a strong thrust by RCVS to encourage such research. The editorial ethos is to do their very best to publish all the manuscripts, which are presented. The scientific content is guiding factor, not the author, the species or the body system.

On the other hand practitioners for their own practice can carry out in-practice research of the "Mode 2" type. Such research obviously has links with clinical audit. The practitioner controls the activity. It is explicitly to address an issue embedded within their practice. The VR would unlikely to be an appropriate journal to publish such research. I will expand on this problem in the conclusions of this project.
The VR provided the names and addresses of the practitioners, which were vital for my case study.

Historical Analysis of the EVJ

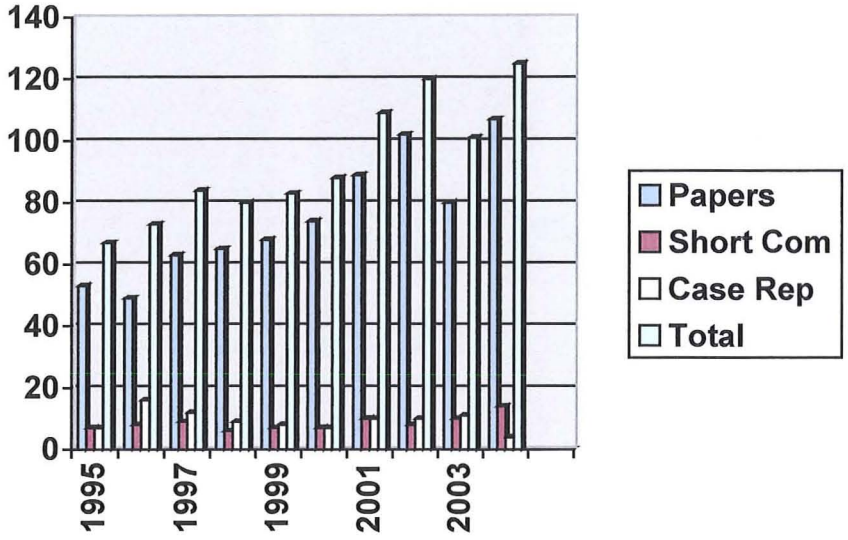
Over the ten-year period 1995-2004 there were 930 peer-reviewed articles in the EVJ. There has been an almost steady rise, except for 2003, as can be seen by the table below.

	Non Practitioners	Practitioners
Year 1 1995	65	2
Year 2 1996	73	0
Year 3 1997	82	2
Year 4 1998	80	0
Year 5 1999	77	6
Year 6 2000	86	2
Year 7 2001	104	5
Year 8 2002	118	2
Year 9 2003	95	6
Year 10 2004	123	2
Total	903	27

This table also shows that less than practitioners wrote 3% of these articles. There were papers, short communications and case reports.

The table below shows the breakdown into the three types

Year	Papers	Short Com	Case Reports	Total
1995	53	7	7	67
1996	49	8	16	73
1997	63	9	12	84
1998	65	6	9	80
1999	68	7	8	83
2000	74	7	7	88
2001	89	10	10	109
2002	102	8	10	120
2003	80	10	11	101
2004	107	14	4	125
Total	750	86	94	930



Even in 1994, the year before my historical analysis was started; the EVJ was leading the field. They published their own analysis (Rossdale 1995) of Volume 26, published in 1995, which contained 66 General Articles, 8 Short Communications and 14 Case Reports. Senior authorship was distributed among residents in the UK (23), USA (37), Australia (6), Canada (5) and continental Europe (23). The average time from acceptance to publication of papers was 7 months with a range of 6-8 months. The rejection rate was 33%. The list of peer reviewers was published. Sadly the number of practitioner authors was not recorded.

The editor states that acceptance was based on the referees reports regarding their merits of originality and science. He stated that the journal aspired to good science, which placed itself at the frontier of progress. He felt that this did not lend itself to being read by busy practitioners. However he had a commitment to the publication of original findings which would further the welfare and health of the horse. His policy was not only to present new findings, but also as far as possible to assist readers to assimilate the data presented.

I studied the EVJ in depth for the ten years after that analysis. There were 930 peer reviewed articles of which the majority, 750, were papers. There were also

94 case reports and 86 short communications. The trend was upwards with a nearly 100% increase. There is an editorial constraint, as this is a solely equine journal. There were less than 3% of the articles written by practitioners. However this is an editorial decision, as the EVJ has a sister journal EVE, which is dedicated to practice and contains a much higher percentage of practitioner written manuscripts. EVJ has the highest IF of any single species journal in the English speaking world. The editor can be congratulated. Other veterinary journals can learn from this achievement.

The editor can also be congratulated for the journal's innovative ideas. The dates when a manuscript is received and when it is accepted for publication are recorded with each article. The web-site even shows articles, which have been accepted for publication but have yet to be published. Each year the list of the peer reviewers is published and the journal records its thanks to them. At the time of presentation of an article, which has multiple authors, the authors have to declare their input to the manuscript. This insures that the credit for the manuscript is apportioned correctly. There is a good balance of articles on the various body systems. There is no editorial restraint on body systems. However the editor does try to produce extra volumes dedicated to a single topic e.g. colic, lameness, or laminitis. There is no doubt that this is a journal with an extremely high scientific value. My research did not reveal any improvements, which could be suggested. This single species peer reviewed journal is obvious edited by an extremely forward thinking editor who must be supported by a like thinking editorial board. It was a pleasure to analyse as I could use the learning to comment on other not so modern peer reviewed journals. The whole ethos of the journal is for active learning from sound science. The clinical papers, which are I find personally very useful, also show how real clinical advancement can be established from good EBM.

They fulfil the pattern of practitioner research, where the questions, answers and conclusions are determined by the practitioners themselves, giving a high clinical impact. I can see as a result of my analysis how the editor has managed to blend these clinical evidence articles with more academic research. This I can especially

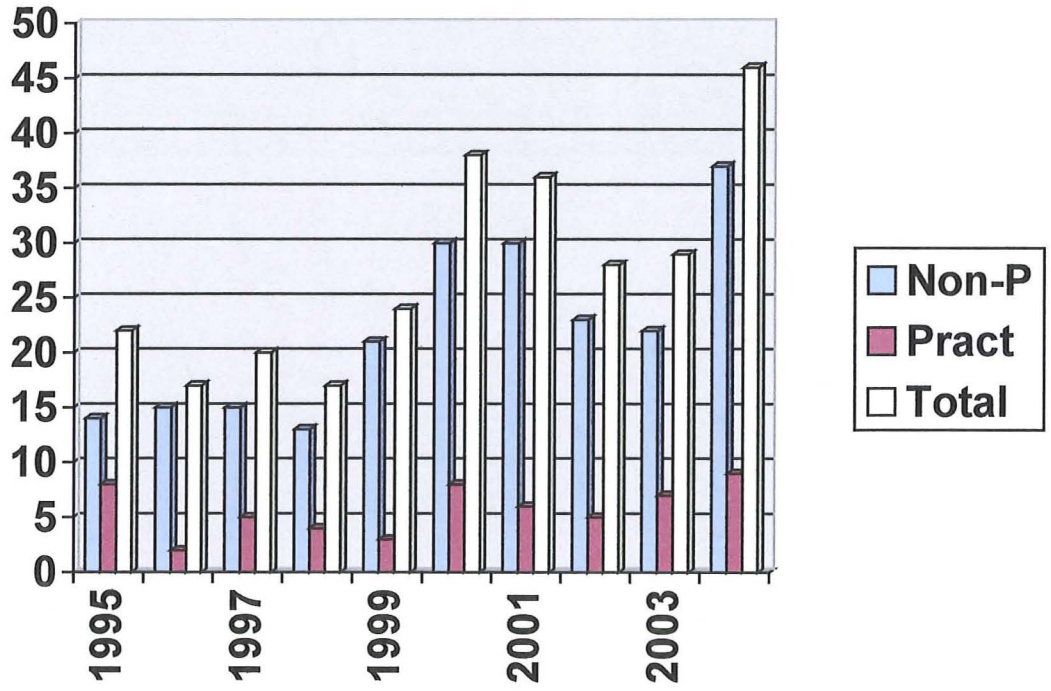
appreciate in the compendia of papers on one subject e.g. colic. This has enabled me to write an article for Veterinary Times (Appendix Y). In this article which sadly will not be peer reviewed, I have tried to use the comments of my 3 equine practitioner colleagues to give the article more strength, rather than just my own experience. I have also learnt from studying the EVJ how a balance of knowledge from both academia and practice can strengthen my own delivery of service to my patients. I can reflect that this is the most fundamental aim of any practitioner. This reflection brings me into a full circle back to the start of my MSc research where we, as a learning set, strove to analyse the competences required by an advanced practitioner. The ability of a practitioner to carry out in-practice research is important for the increase of knowledge for all practitioners as well as the increase in knowledge for myself as an individual practitioner.

The fact that only 3% of the manuscripts are written by practitioners is not a fault or a detriment of the journal as a viable outlet for publication of practitioner research has been provided with the publication of EVE.

Historical Analysis of EVE

Over the ten-year period 1995-2004 there were 277 articles in EVE. There was no differentiation into papers and short communications. There were no case reports. There was a total rise in annual numbers of articles over the period, with higher numbers in 2000 and 2001 than shown by the trend. The table below shows the numbers of articles written by non-practitioners as compared to practitioners.

Year	Non-practitioner	Practitioner	Total
1995	14	8	22
1996	15	2	17
1997	15	5	20
1998	13	4	17
1999	21	3	24
2000	30	8	38
2001	30	6	36
2002	23	5	28
2003	22	7	29
2004	37	9	46
Total	220	57	277



The numbers of articles written by practitioners is not large but is significant. There has been a rise in the total number of articles from 22 to 46. The average number of articles written per year by practitioners was five. The trend was upward.

Equine Veterinary Education was started in 1989 as a vehicle for contributions of an educational nature formerly included in the EVJ. Over the ten-year period between 1995 and 2004, there has been an increase in numbers of articles by over 100%, with a total of 277 in 2004. This is a single species journal dedicated to equine practice. Practitioners wrote 21% of the articles. The rejection rate of manuscripts for the journal is approximately 35%. There is no record as to whether practitioner written articles have a higher rejection rate. All the body systems are well represented. If this journal was on its own it might be considered to be lightweight. However in conjunction with the EVJ they form a formidable combination which is difficult to fault and therefore it is difficult to suggest improvements. I was well aware before I started my historical analysis of this journal that it had been created by the editorial board of the EVJ to fill an important gap in the equine peer reviewed journal library. I am mainly an equine practitioner and I can see it has filled a gap in my clinical learning. My analysis has shown me how real reading rather than just browsing can be a benefit to the delivery of service to my patients. The ability to write a paper for a peer-reviewed journal is very closely linked with the ability to read a paper in a peer-reviewed journal. It is an ability, which is not innate. It has to be acquired.

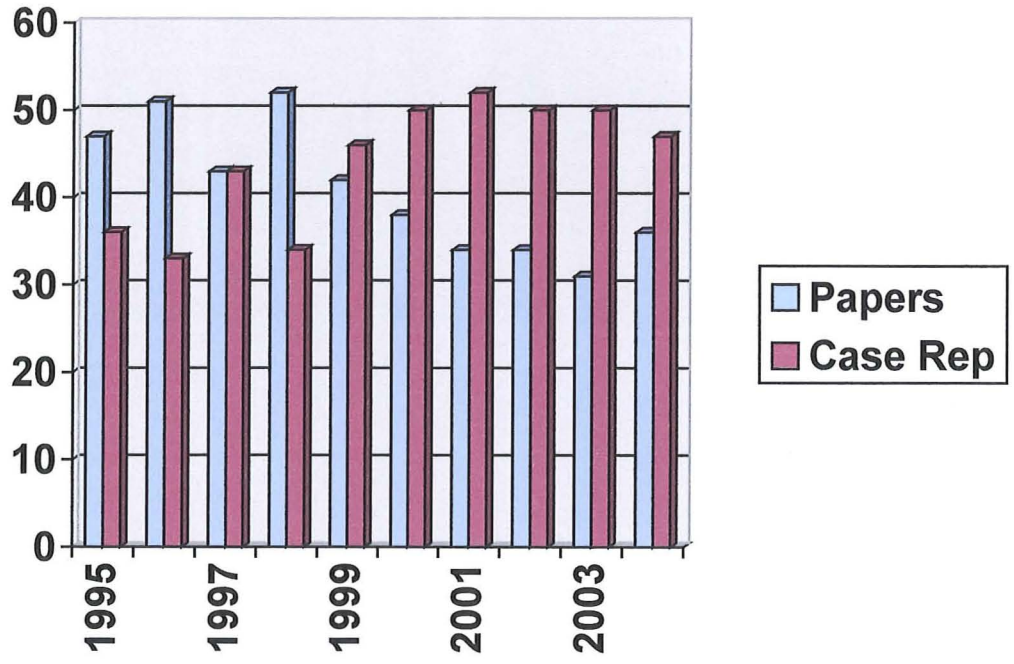
I can appreciate now, having analysed this journal, why the impact factor is a useful measure of the value of a journal. There are a large number of citations between EVE and EVJ. I am sure if they were bulked together as one journal; it would have an extremely high IF. However as a busy practitioner it is very useful to have them separate. EVE has a section devoted to analysing the papers in EVJ. It is not just a reproduction of the abstracts as in other journals but a charted journey through the papers, including the editorial in one volume of the EVJ. I have found in my own reading I need to link papers like a literary review in my own mind and

try to catalogue this information for later retrieval. A practitioner needs to carry out this exercise, which is like a personal meta-analysis so that papers which he reads can be full evaluated for him with in his own sphere of work. I suspect that academics have been carrying out such exercises for years. However that is beyond my experience. It is only as a result of my research that I can fully appreciate the value of such an exercise. I perceive the tree of learning is likely to have many branches.

Historical Analysis of the JSAP

Over the ten year period 1995-2004 there were 408 papers, on dogs and cats published in the 120 volumes of the JSAP and 431 case reports. These are analysed in years in the table below.

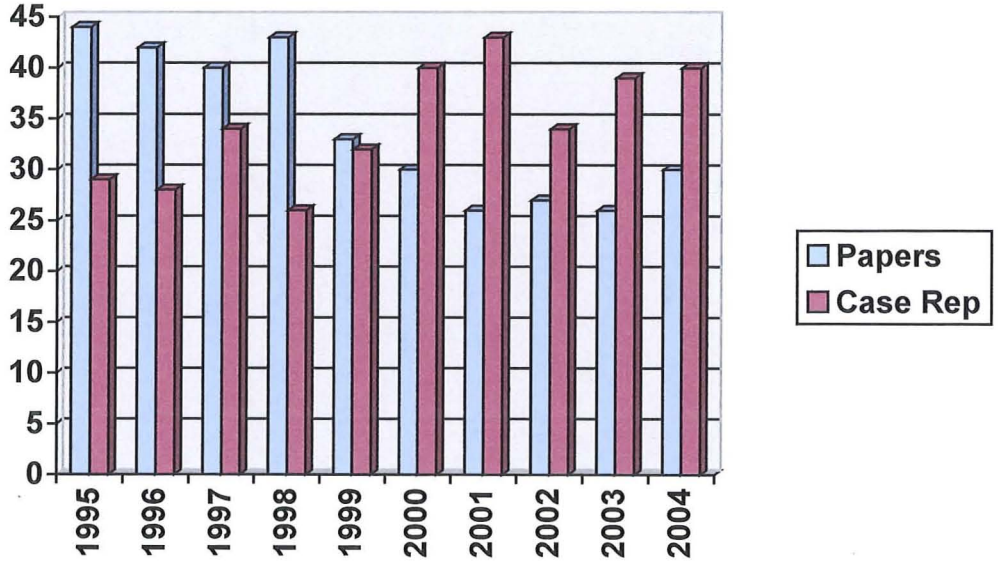
Year	Papers	Case Reports
1995	47	36
1996	51	33
1997	43	43
1998	52	34
1999	42	46
2000	38	50
2001	34	52
2002	34	50
2003	31	50
2004	36	47
Total	408	431



The figures indicate a small decline in the number of papers in the last half of the period. The reverse is shown by the number of case reports, to such an extent that the total number of case reports over the ten year period exceeds that of the total number of papers.

These figures can be split into species. The numbers of papers and case reports for dogs are shown in the table below

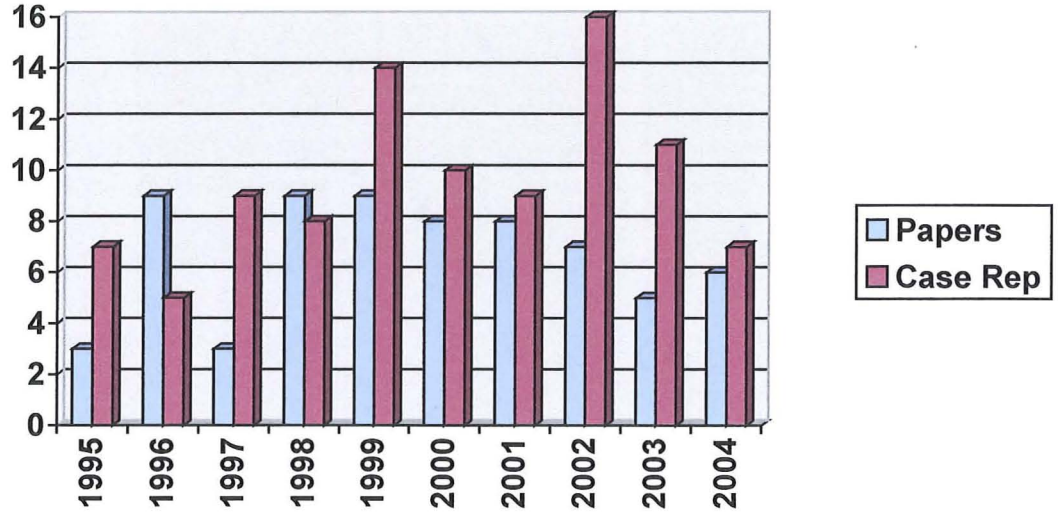
Year	Papers	Case Reports
1995	44	29
1996	42	28
1997	40	34
1998	43	26
1999	33	32
2000	30	40
2001	26	43
2002	27	34
2003	26	39
2004	30	40
Total	341	335



The total numbers of articles in the JSAP on dogs remain fairly constant over the ten-year period. However this is achieved because, as the number of papers declined in the last five years, the number of case reports increased in compensation.

The table below shows the number of papers and case reports for cats.

Year	Papers	Case Reports
1995	3	7
1996	9	5
1997	3	9
1998	9	8
1999	9	14
2000	8	10
2001	8	9
2002	7	16
2003	5	11
2004	6	7
Total	67	96

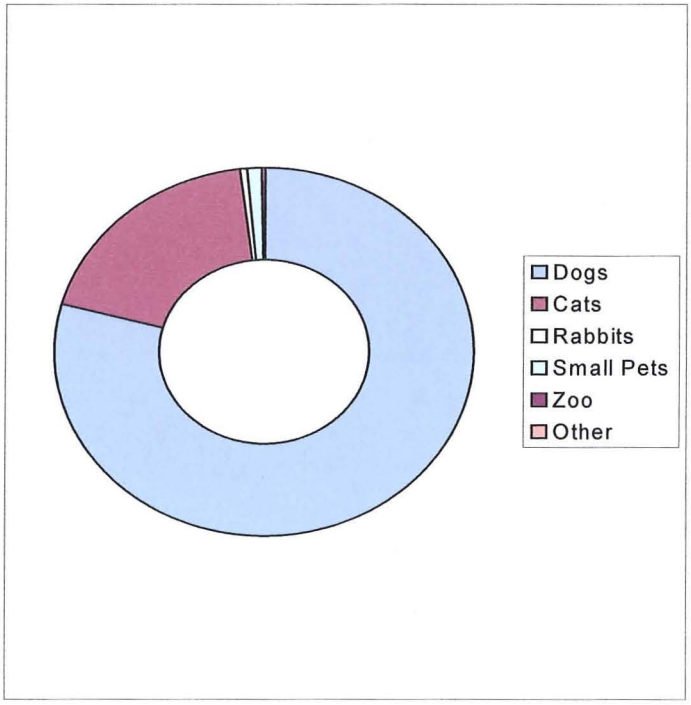


The numbers of both papers and case reports are very much less for cats compared with dogs. However the pattern over the ten years is very similar with the number of papers declining in the last five years and the number of case reports increasing over that period.

There are very few articles other than papers and case reports on dogs and cats. There are nine articles on small pets of which three are papers and six are case reports. There are four articles on rabbits, one paper and three case reports. There are two case reports on zoological animals. These articles are distributed at random throughout the ten years. There was one paper giving advice to practitioners on how to write a scientific paper, which was very useful for this project.

The table below highlights the content of the JSAP over the last ten years.

Dogs	Cats	Rabbits	Small Pets	Zoo	Other
676	163	4	9	2	1



The numbers of papers written by practitioners over the ten years is compared with the number written by non-practitioners and the total number of papers in the table below.

non-practitioner authors	Practitioner authors	Total number of papers	Year
39	8	47	1995
50	1	51	1996
42	1	43	1997
49	3	52	1998
40	2	42	1999
37	1	38	2000
32	2	34	2001
31	3	34	2002
26	5	31	2003
33	3	36	2004

The case reports show a different pattern

Non practitioner authors	Practitioner authors	Total short communications	Year
31	5	36	1995
30	3	33	1996
37	6	43	1997
29	5	34	1998
38	8	46	1999
40	10	50	2000
42	10	52	2001
46	4	50	2002
43	7	50	2003
41	6	47	2004

Over the ten year period there has been a total of 839 peer reviewed articles in this journal. These can be divided into 431 case reports and 408 papers. The total number has not increased over the ten-year period but the balance has switched in favour of case reports, which I consider is a slight weakness. Officially the only species restraint is that of requiring it to be a small animal. However in reality manuscripts on dogs and cats are the vast majority with only 1% of articles being concerned with other species e.g. rabbits and other small pets. Once again this might be considered a weakness but when it is

remembered this journal has the same publisher as the VR, where this type of article occurs frequently, they are an excellent combination. The balance of 80% to 20% for dogs and cats is a fair one and is an indication of the importance of each of these species to the Small Animal Practitioner.

Although this journal is aimed at practitioners it has few practitioner authors in the last ten years. Practitioner authors wrote only 7% of the papers and 15% of the case reports. However the editor can be congratulated on her drive to change this in the last year.

The JSAP also has editorials, news items relating to the British Small Animal Association (BSAVA), advertisements etc. These are outside the remit of this project. The historical analysis of the JSAP was different for me from the other three journals. I had no real clinical interest in the papers and case reports themselves, as they were outside the boundaries of my practice. I could take a more uninvolved view. I could study the journal as a journal and not as vehicle for me to gain further clinical knowledge. I can understand that it has great potential, which has yet to be realised. 80% of my profession is now made up of small animal practitioners. I have no way, without further research, of knowing whether this journal reaches this large number of practitioners. I suspect it does not. This is not the fault of the journal which of a very high quality.

My single real criticism, that there is a shift in numbers from papers to case reports, is not the fault of the editor but the authors. On reflection I can see that the study of this single journal would be a worthwhile MSc thesis for a small animal practitioner. Case studies of the readers would reveal some interesting data.

I can reflect that a study of any facet of professional life, in this case, a journal outside my clinical interest, is much harder for the researcher if the researcher has not got a passion for the subject. The other side of the coin is that the view is going to have potentially less bias.

Case Study of successful practitioner authors.

I had contacted the 215 successful practitioner authors who had published articles in the four peer-reviewed journals studied in the historical analysis. 95 successful practitioner authors replied. They were 44% of a possible total of 215. 86 gave an email address, which made a follow up clarification possible.

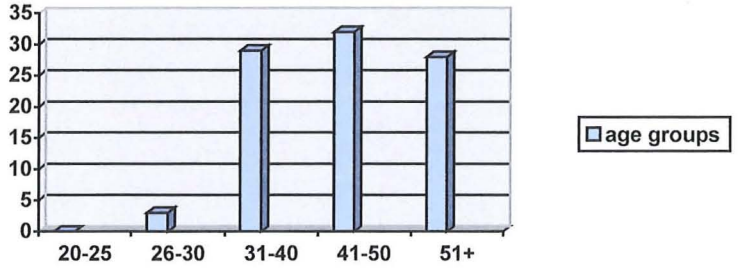
Each author was given a number. I then treated the reply as from that number and the name was not recorded. Confidentiality was therefore protected. I prepared spreadsheets with all the quantitative replies. The results of the 95 replies are shown below.

Some of the interview questions were of a qualitative nature. I recorded these carefully. I then grouped them in to similar type answers. I could then give a numerical figure to the replies.

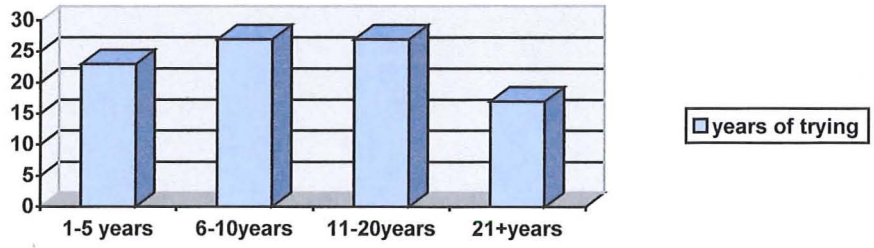
74 i.e. 78% had extra qualifications. Taking pages 100 and 101 at random from the register of members of the Royal College of Veterinary Surgeons and counting 95 veterinary surgeons, I found 12 i.e. 13% had extra qualifications.

The 74 in my case studies actually had a total of 153 extra qualifications i.e. two per successful practitioner author. The random 12 from the register had 29 extra qualifications, giving a similar figure of two per veterinarian.

Three did not give their age and there were none in the 20-25 age group. There were three in the 26-30 age group, 29 in the 31-40 age group, 32 in the 41-50 age group and 28 in the 51 or over age group.



The spread of the number of years the successful practitioner authors have been publishing is similar. 23 had been publishing for 1-5 years, 27 had been publishing for 6-10 years, 27 had been publishing for 11-20 and 17 had been publishing for more than 21 years. (There was one author who failed to answer this question).



Of the 95 successful practitioner authors, 41 described themselves as GPs and 51 as referral GPs. There were also three other successful authors who I interviewed in error. They were not actually in practice but were working in industry, for DEFRA or for a charity. However I have included them as they were not academics, nor were they teaching.

32 successful practitioner authors (approximately a third) had had their first paper rejected. The other 63 (two thirds) had been successful first time.

Of the 32 who had had rejected papers. 19 i.e. 60% did not have outside help but 13 i.e. 40% did have outside help.

On the other hand these 95 practitioner authors were all eventually successful. The figures for outside help are very similar. 51 i.e. 54% did not have outside help. 44 i.e. 46% did have outside help with their successful paper.

75 i.e. 80% of the successful practitioner authors used the notes for contributors of the specific journal before submitting their manuscript.

Just under half of the successful authors were aware that the sources of the references in their article would influence the standing in the scientific community of the journal as measured by the Impact Factor (IF).

A literature search was carried out by 80 i.e. 84% of the successful authors before starting the writing up of their manuscript.

60 i.e. 63% of the successful authors claimed they would use a textbook written specifically to help veterinary practitioners to write and publish articles if there was one available. 73 i.e. 77 % already had a well-stocked practice library.

When asked whether they, as successful practitioner authors, would be prepared to read and critique a paper from an aspiring practitioner author, 76 i.e. 80% agreed that they would. However that number was reduced to 60 i.e. 63% when asked if they would be prepared for their names to appear on a list available to aspiring practitioners for that purpose.

88 i.e. 93% of successful practitioner authors felt practitioners should carry out in-practice research. 78 i.e. 82% did not feel that practitioners needed extra qualifications to do in-practice research.

90 out of 95 successful practitioner authors wanted the results of in-practice research to be published in peer reviewed journals.

When asked whether a piece of in-practice research should be included as a compulsory module in the new RCVS modular certificates, the 95 successful practitioner authors were equally divided. Seven overseas authors thought they were not qualified to comment.

The 43 successful practitioner authors who were in favour of a compulsory module were asked whether evaluation should be acceptance for publication in a peer reviewed veterinary journal. 32 i.e. 74% agreed with this method of evaluation.

38 successful practitioner authors quoted in total 94 papers written by practitioners which could be used as models for aspiring authors. 62 had written these papers themselves, which indicates how proud they are of their own work.

37 i.e. 38% of the authors stated that they had defined a specific area of research to answer a specific question before they started their research. The other side of this coin is that 52 i.e. 55% did not define a specific area for the research, nor did they try to answer a specific question.

However 42 i.e. 44% did define a specific methodology before starting their research.

51 i.e. 54% had a specific journal in mind before starting their research.

Only nine of the 95 successful practitioner authors funded their time before starting their in-practice research.

On the other hand 81 i.e. 85% carried out their research to satisfy an inquiring mind and 76 gained personal fulfilment from carrying out the in-practice research.

Only six out of the 95 practitioners carried out their research to solve a clinical dilemma for personal financial benefit.

66 i.e. 69% carried out their research to solve a clinical dilemma for the benefit of the individuals suffering from that condition.

Just under half of the authors carried out their research as a route to further qualifications.

67 suggested ideas to encourage other practitioners to carry out in-practice research and 77 had ideas how to encourage practitioners to publish their results in a peer reviewed journal.

75 i.e. 79% of the successful practitioner authors were living in the UK at the time of writing their successful manuscript. 12 were living in Europe, six in the USA and seven elsewhere.

If you divide the 95 successful practitioner authors into two groups, 51 referral GPs and 44 others (41 practitioners, 1 DEFRA, 1 industry and 1 working for a charity) you get very similar figures for the two groups except that: -

- Referral GPs were 6 times less likely to have received outside help with their first successful paper.

- Referral GP's were three times more likely to have studied the notes for contributors before their submission.

- GP's were twice as likely to read a book to help them get their manuscript published.

- Referral GP's were twice as likely to have not only defined a specific area of research but also to have defined a methodology before starting.

- GP's were twice as likely to have funded their time before starting their in-practice research.

Case study of unsuccessful authors

There were eight unsuccessful authors recruited for this case study.

Once again each author was given a number. I then treated the reply as from that number. The name was recorded in a secure place. Confidentiality was therefore protected. I prepared spreadsheets with all the quantitative replies. The results of the 8 replies are shown below.

Some of the interview questions were of a qualitative nature. I recorded these carefully. I then grouped them in to similar type answers. I could then give a numerical figure to the replies.

Two had extra qualifications, one each.

I have analysed the list of members of the RCVS by taking page 100 at random. On that page 13% of veterinary surgeons had extra qualifications. 25% of the unsuccessful practitioner authors had extra qualifications. However 78% of the successful practitioner authors had extra qualifications.

The ages of the eight unsuccessful practitioner authors were in two categories. Three were between 41-50 years of age and five were over 51 years of age.

A comparison of veterinary surgeon's ages between the RCVS survey, the successful practitioner authors and unsuccessful practitioner authors is shown below in percentage terms.

	RCVS total	Successful	Unsuccessful
20-25	2%	0%	0%
26-30	17%	3%	0%
31-40	29%	31%	0%
41-50	22%	34%	38%
51 +	30%	32%	62%

They were all GPs. None were referral GPs. Seven had only been trying to publish a paper in the last 1-5 years. One had been trying to publish between 11-20 years.

Below is a comparison in percentage terms of the years of publication of successful and unsuccessful practitioner authors in peer reviewed veterinary journals.

	Success	Unsuccessful
1-5 Years	26%	87%
6-10 Years	28%	0%
11-20Years	28%	13%
20+ Years	18%	0%

None of the eight unsuccessful practitioner authors had had help from outside for their unsuccessful paper. Only one had used the notes supplied for contributors before writing the manuscript.

None of the eight were aware that sources of their references influenced the impact factor of the journal. Only two had carried out a literature search to help guard against the increasing problem of duplication.

Seven would have used a textbook specifically written to help practitioners to write and publish papers if it had been available. Four had a well-stocked library.

All eight would be happy to approach a successful practitioner author to ask for help with their paper.

All eight thought that practitioners should perform in-practice research. None felt that only practitioners with extra qualifications should perform in-practice research. All eight felt that the results should be published in peer reviewed journals.

Seven did not feel a piece of in-practice research should be included as a compulsory module in the new possible RCVS certificate. One was uncertain.

None gave any references of papers, written by practitioners, which could be used as role models for aspiring authors.

All eight defined a specific area of research before starting, but only one had a single specific question. None defined a project methodology before starting the research.

All eight had a specific journal in mind, but none funded the time accurately.
All eight undertook the research to satisfy an inquiring mind but only six for personal fulfilment. One undertook the research to solve a clinical dilemma for personal financial benefit.
Seven undertook the research to solve a clinical dilemma for the good of the individuals, which suffer from the condition.
None of the eight undertook the research to obtain further qualifications.
When asked for the main reason why their paper was refused publication: -

- Three unsuccessful practitioner authors said that the number of their cases was too small,
- Three said the editor was not happy with the methodology,
- One said that the statistics were not thought to be valid,
- One said the peer reviewers were not happy about the actual surgical method.

Case study of editors of peer reviewed journals.

There were eleven editors interviewed. They were each given a number. The data was stored in a secure place and from then on the results were quoted by number. Ten performed a preliminary screening. One did not. All decided on whether the content was of interest to their readers, with one consulting an editorial board.

Eight decided whether the scientific standard was adequate for the journal, with one consulting the editorial board. Three did not.

All decided if the format was adequate enough compared with the notes supplied for contributors.

The standing of the author influenced only one. Ten editors did not let the standing of the author affect the likelihood of publication.

Five were influenced by the source of the references regarding the likelihood of publication. Six were not influenced by the source of the references.

Seven editors had mechanisms in place to guard against the increasing problem of duplication. Four did not.

The editors were asked to grade the reasons why there were so few papers published by practitioners. The numbers of their replies are in the table below.

Reason	Very important	important	Fairly important	Not important
Few papers presented	8	2	0	1
Content not of interest	1	0	1	9
Content not of higher enough scientific standard	3	3	2	3
Layout not as required by notes to contributors	0	1	4	6
Author not known	0	0	0	11
Other Reasons Please State.....				

Editor number one gave no other reasons.

Editor number two stated:

1) Practitioner's papers are often interesting but anecdotal. We publish science wherever possible. There is already too many anecdotes quoted as truth, and has been for generations.
2) Practitioner's papers have illustrations of inadequate quality. Illustrations "sell" our journal and must be more interesting than the breakfast cereal.
3) Practitioners use poor English. Writing is an art and scientific writing has rules – Practitioners need to learn these. We do not have staff to rewrite every manuscript. Believe me, our reviewers, or editorial staff does rewrite a lot. The scientific careers of some academics are built on the work of good editors.
4) Practitioners are not trained in scientific experimental work. They are in a good situation to comment on frequency of disease (most literature is distorted by tertiary opinion referral). Practitioners should also be able to compare therapies with prospective studies, if they take advice on how to set these up.
5) There is misuse of statistics by both practitioners and academics.
6) It is galling to see journals with higher citation indices accept rubbish manuscripts which we have rejected as scientifically poor. Reviewing standards of these journals are appalling.

Editor number three stated that practitioner authors were unwilling to accept help.

Editor number four stated practitioner authors needed help, which the editor was prepared to give, provided the paper looked interesting.

Editor number five stated the journal policy was not to include clinical reports unless very topical.

Editor number six stated that practitioner authors failed to liase with academic co-authors.

Editor number seven felt practitioners were too busy and did not see any business opportunities in publication.

Editor number eight gave no other reasons.

Editors' numbers nine and ten both felt that referral GPs knew the pit falls and therefore were reluctant to risk rejection. Practitioners would take the chance then have rejection and become disillusioned.

They also stated that selection was submission driven. Practitioners did not submit and therefore there were few practitioner papers.

Editor number eleven gave no other reasons.

All the editors felt that practitioners should perform in-practice research. Ten felt that practitioners should have extra qualifications. Only one felt extra qualifications were not necessary. All eleven editors' felt the results should be published in peer reviewed journals.

Nine editors did not think a piece of in-practice research should be included as a compulsory module in the new possible RCVS certificate. Two thought a piece should be included. These two thought agreement for publication in a named peer reviewed journal was a good method of evaluation.

The editors were asked if their journal would be prepared to commission in-practice research provided funding was not considered. Six said they would be prepared and four said they would not be prepared to commission in-practice research. One editor said that such a decision was not his to take.

The editors were asked to provide references of three papers published in their journal, written by practitioners, which could be used as role models for aspiring authors. Nine provided references and two declined.

The results of the extra questions asked of editors after completion not only of the case studies but also the historical analysis of the journals is shown below.

Journal with random identification	1	2	3	4
Do you think it is a good idea to publish dates for manuscripts	Y	Y	Y	Y
Do you think it is a good idea to publish a list of peer-reviewers	Y	Y	N	N
Do you think the peer reviewers should be unaware of the author	N	N	N	N
Do you think with multiple authors they should declare their input	Y	Y	Y	Y
Do the species affect publication	Y	Y	Y	N
Does the body system affect publication	N	N	N	N
Does the number of cases influence publication	Y	Y	Y	N

Case study of newly qualified veterinary surgeons

These were face to face structured interviews with no ambiguous questions (Appendix N).

1. 40 new graduates were interviewed.

2. All 40 (100%) intended to go into practice.

3. 36 (90%) wanted to obtain further qualifications. 4 (10%) did not.

4. 32 (80%) wanted to do some in-practice research. 8 (20%) did not

5. 16 (40%) felt their training had equipped them adequately to carry out in-practice research. 2 (5%) were uncertain. 22 (55%) felt it was inadequate.

6. 36 (90%) wanted to publish a manuscript in a peer reviewed journal. 4 (10%) did not.

7. 18 (45%) felt such a manuscript could be used as a method of assessment for a higher qualification. 2 (5%) were uncertain. 20 (50%) did not.

Case study of final year veterinary students.

These were face to face structured interviews with no ambiguous questions (Appendix 0).

1. 48 final year veterinary students were interviewed.

2. 47 (98%) intended to go into practice. 1 (2%) intended to go into academia.

3. 48 (100%) intended to obtain further qualifications.

4. 45 (94%) wanted to do some in-practice research. 3 (6%) did not.

5. 27 (62.5%) consider their training had equipped them with the ability to carry out research. 21 (37.5%) did not.

6. 35 (73%) would like to have a manuscript published in a peer-reviewed journal. 13 (27%) would not.

7. 12 (25%) would like such a manuscript to be used as a method of assessment for a higher qualification. 36 (75%) did not.

Chapter 6 - discussion

The wide breadth of species represented in the VR is often criticised by UK veterinarians. The VR is committed to research. This is confirmed by the editorial comment in December 1997 'Veterinary research is vital to any society which is concerned about the health and welfare of farm and companion animals, and about the safety of food of animal origin'.

No peer-reviewed journal is perfect. One of the reasons for this is the process of peer review is not perfect. The process has evolved over the last 200 years and is the bench mark for scientific advancement. Propagation of information is likely to be speeded up in future with advanced electronic communication. The editor of JSAP (Dunn 2006) asks, "why do people publish in journals?" She states that in this electronic era everyone can publish their work and make it more freely available on the Internet. She feels that whatever the motivation for publication, all authors want their work to be read and respected by their peers. Anyone can publish their work (whatever the quality) on the Internet and it is this fact that devalues the material there. This same editor admits (Dunn 2007) the move to on line submission has resulted in an increased number of submissions of both papers and case reports.

However although the peer-review process may change it is unlikely to be replaced. In order to improve peer review we need to not only improve manuscript management but also manuscript assessment. An author has to be aware that these two criteria need to be addressed by the journal.

An assistant editor often carries out manuscript management. It includes the grouping of papers covering the same topics. They maybe linked with specific advertisements. If the group of papers is large enough they may be linked with an editorial or a commissioned review paper.

Manuscript assessment requires the reviewers and to a lesser extent the editor, to detect and describe flaws in the manuscript. These flaws will relate to

methodology, results, discussion and conclusions. The editor also has a vital role of deciding the overall importance of the piece of research.

My results include a very large amount of numerical tables and resulting graphs. These have not been analysed statistically. Such an analysis would be, at best misleading, at worse meaningless. The fact that there are 0.1675% of papers in the VR on marine mammals is meaningless. No one has studied the number of veterinarians working with marine mammals in the UK or indeed world-wide. Certainly there are no references in the literature on the number of veterinary man-hours worked per year on marine mammals. Therefore it is impossible to say there are too few or too many articles on marine mammals in the VR. However with experience the examination of graphs of numbers of papers on different species can throw light on to the complex issue of what type of manuscript should be published by the VR.

Equally the divisions into body systems is entirely arbitrary. Statistics would not be helpful in unravelling demand for certain systems to be represented for the readership. It is impossible to find out the numbers of readers who are interested in each body system. However it is helpful to study numbers of articles on various body systems on an annual basis to see the effect of the emergence of a new disease or the discovery of a zoonotic implication of a disease. There is a considerable amount of data, which might be useful for further research. As this data is not directly related to this work based project I have removed the analysis to Appendix R0.

I have to question the value of the quantitative data, which I purposely obtained BEFORE I interviewed the editors. I thought I could direct my structured interviews better if I knew the content of the journals before I interviewed the editors. I imagined I could ask more probing questions. In reality I found out from the editors that they judge all manuscripts on scientific merit. They do not select on species or body system. They also claim that there is no bias on authorship. The authors, themselves carry out the selection by choosing that particular journal.

However although the editors may not actually decide which manuscripts are sent to their journal, there is a selection by the authors on account of the perceived rigor of the peer review for each journal. The 33% rejection rate is a real obstacle. My research has revealed a definite flaw in the system. The editors are dedicated to publish good science, a laudable goal. Equally some editors are determined to publish work which is a relevance to their readers. 16 years ago the editor of the EVJ realised this problem was arising. He therefore formed a separate journal for practitioners, EVE. Thus he had two peer reviewed journals under his control. They were aimed at different readers and different authors. EVJ had papers, which were mainly hypothesis proving or disproving. EVE on the other hand had more problem solving papers. These, particularly if they were in a group on a certain subject, were often followed by critical commentary.
The study of these peer-reviewed journals was a journey I relished. For me the methodology of this analysis was relatively straightforward. I collected the data with zeal and relished the analysis of the results. I was too over enthusiastic and reproduced a massive amount of data.

The value of having a facilitator was brought home to me at this point. Gentle advice was given and the data, of which I was so proud, was moved to the appendix. The examiners, who advised that even the analysis should be moved into the appendix (Appendix R0), moved on my learning even further. A researcher needs to have a passion for the project but it is easy to forget that the reader may not share that passion. The reader is more interested in the conclusions than the data. However a wise reader is always interested to know how the data was obtained so that he can assess the value of the results and hence the conclusions.

In my interviews the practitioner researchers have tended to be very critical of the editors and peer-reviewers particularly the totally unsuccessful authors. As a reflective practitioner I can see that although applying theory and technique to writing papers is very important it does not provide an ideal way of communicating concepts and analytic methods in the first instance. Reflecting on the fact that the successful practitioner authors and particularly the unsuccessful

practitioner authors tend to be drawn from the older members of the profession. One might argue that this is likely to be because they needed to be older to be totally unsuccessful. This is not the case. It can be seen from the figures in the table below that the unsuccessful authors have been trying for a shorter time for publication than have the successful authors.

Time before first submission	Successful	Unsuccessful
1-5 Years	26%	87%
6-10 Years	28%	0%
11-20Years	28%	13%
20+ Years	18%	0%

This certainly indicates that perseverance is required for successful publication. Reflecting on the desire of the final year students and new graduates to get an article published, it is surprising that it is more senior members who have been successful. The feelings of the profession are changing. My results show 90% of newly qualified veterinary surgeons expressed a desire to publish a manuscript in a peer-reviewed journal.

It can be seen from the methodology section that there was considerable difficulty in recruiting totally unsuccessful authors for the study.

The response rate of 47% of the successful authors was excellent. Of these 34% were not successful with their first attempt. This is not surprising as the editors confirm that there is a rejection rate of up to 33%. The evidence is therefore validated by triangulation. It is possible that even the eight unsuccessful authors who were interviewed might become successful in time. Hopefully this will be the case after the initiatives already undertaken by the RCVS, DEFRA and the editors of the peer reviewed journals. A conclusion could be drawn that the lack of unsuccessful authors found after such due diligence is that there are in fact very few of them.

Ethical reasons have hampered my research. The editors, quite correctly, were unable to furnish me with the details of the refused manuscripts. I was therefore relying entirely on volunteers. Naturally an author, who has repeatedly been refused publication, is unlikely to respond to a letter asking for more work,

particularly when it is a general letter and therefore not specifically addressed to him or her.
However I feel it is quite valid to draw inferences from these eight unsuccessful authors. Their opinions are no less valid just because they are few in numbers for whatever reason. One can hope that with further initiatives and the publication of my book they will become "a thing of the past" and the number of successful practitioner authors will increase.

The idea that veterinary practice and research should have a common philosophy is not new. It was the main topic in the 'Sir Frederick Hobday Memorial Lecture in 1985 (Rossdale 1985). Hobday combined the art and science of a practitioner with that of a research worker. In this, he was a man of his times, for in his day this combination was possible, practical and acceptable to the profession and the clientele. As knowledge broadened and new techniques of diagnosis and therapy were developed, a change occurred in the structure of the veterinary profession. Graduates from the university veterinary schools have become segregated increasingly into those, on the one hand, who conduct research and, on the other hand, those in practice. The barrier between them and us, between academic and clinician, has regrettably become stronger, higher and less readily negotiable. This barrier has been raised even higher in the last ten years. My results show that in the VR, the most commonly read peer-reviewed journal (Duncanson 2003), there were only two papers solely written by a practitioner out of a total of 1631 papers. The Editor of JSAP (Dunn 2007) is well aware of these problems. The JSAP had a much higher practitioner input in the past. However the move to online submission has resulted in an increased number of submissions of both papers and case reports. The number of pages in the journal has remained constant through financial constraints. It is therefore inevitable that the rejection rate will increase. The reviewers have been asked to apply more stringent criteria to the reviewing process. As a result of my interview the editor has become aware that the number of case reports has risen to the detriment of papers. So in future it will be journal policy to favour the publication

of papers and case series over single case reports. Only if a single case report exemplifies best practice will it be included. The guidelines for authors have been changed. Authors are requested to provide a letter to accompany their submission indicating why it should be published. It the report shows an interesting or novel 'twist' to previously published material it will be includes as a 'short report'.

In the early nineteen eighties the Royal College of Veterinary Surgeons recognised the need for specialist status. Initially these 'specialists' were found in the universities, but it was hoped that more 'specialists would become clinicians in private practice. To some extent this has occurred. Sadly this has not resulted in a large number of papers appearing in the specialist peer reviewed journals. For example my research records that only 3% of articles, this includes short communications and case reports, were written by practitioners in the last ten years in the EVJ.
In 2003 the EVJ launched one initiative to address this problem. They introduced a new category of article entitled clinical evidence (Rossdale 2003). The editor helps the reader to identify a paper that provides strong clinical evidence.

It needs: -

1) A treatment feasible and available in practice.
2) A condition or procedure that is relatively common in practice.
3) It has a high likelihood of being true.

We must be sceptical. We have to consider that a clinical condition will get better on its own or even in spite of treatment or intervention. A control group is therefore essential. Normally a new treatment will be compared with an established treatment, as no treatment at all would be unethical.
Bias needs to be eliminated by proper randomisation and blinding. The statistics need to be appropriate. P values indicate chance. Most journals will not accept a less that 1 in 20 chance of the result being unrepresentative.

A more useful method of presenting this type of error is the 95% confidence interval (derived from the P value). This is the range of values within which there is a 95% chance of finding the 'true' value (Rossdale 2003). Confidence intervals can be calculated for many different types of distribution. If the confidence intervals of the reported effect in the control group and the test group overlap, there is insufficient evidence to recommend it. Confidence intervals reflect clinical rather than statistical significance.

The EVJ provide some good criteria for clinical evidence articles (Rossdale 2003).

1) Papers describing a therapeutic study

Validity

- Assignment of patients to treatments should be randomised (and produce treatment groups of comparable size).
- Trials should be performed single- or double-blinded.
- All animals should be accounted for at the end of the trial.
- Dropout criteria should be determined at the beginning of the trial and no more than 20% of animals should be withdrawn.
- Other than the therapies under test, treatment groups should be treated equally.
- Selection of animals should produce comparable treatment and control groups (i.e. equal representation of sex, breed, and age).

Importance

- Raw results should be presented in a contingency table.

- Comparison of treatment and control groups should be presented as a relative risk reduction, absolute risk reduction, and the number needed to treat together with confidence intervals.

2) Papers describing studies on diagnosis

Validity

- A clearly defined and valid test should be used as a reference standard.
- Comparison of the results of the test should be performed blind.
- Experimental tests should be performed on an appropriate spectrum of animals.
- The reference standard test should be applied to all animals.

Importance

- Raw results should be presented in a contingency table.

- Sensitivity, specificity and likelihood ratios for positive and negative results should be presented.

3) Papers describing studies on harm (e.g. side effects) and aetiology

Validity

- Groups of animals should be clearly defined and comparable.

- Exposures and clinical outcomes should be measured the same way in both groups of animals.
- Follow-up should be performed on all animals and for a sufficient length of time.
- The suggested causal link should be rational.

Importance

- Raw results should be presented in a contingency table.
- For randomised trials or cohort studies, relative risks should be presented.
- For case-control studies, odds ratios should be presented.
- The number needed to harm should be presented together with the confidence intervals.

4) Papers describing studies of prognosis

Validity

- Animals in comparison groups should be comparable with any difference in prognosis not accounted for by any other important factor.

- Follow-up should be long enough to reveal any likely effect.
- All animals should be followed-up equally (dropout rate <20%).
- Outcomes should be measured or analysed blind.

Importance

- Results should be reported as % survival at a particular point in time; as median survival (length of time by which 50% of study patients have had the outcome); or as a survival curve that depicts, at each point in time, the proportion of the original study sample who have not had the specific outcome.

- Confidence intervals should be provided.

Randomised trials are an important component of clinical evidence, yet the funding for these trials is left largely to the pharmaceutical industry who have an obvious motivation both for their performance and favourable outcome. My research indicates that only 6% of successful practitioner authors and 12% of unsuccessful practitioner authors gained any financial benefit from their in-practice research. There is a need for centralised, impartial financial support for in-practice veterinary research. However the quest editor of JSAP (Ramsey

2007) thinks that if small animal practice in its widest context is to progress then it must help itself.

There is no prospect of substantial government or medical charity funding. Such help need not necessarily be financial – the veterinary profession can use its effective powers of advocacy and endorsement to support the research that drives this progress. Veterinary surgeons are, as a profession, few in number and we can not hope to fund clinical research on companion animals on our own. Our greatest strength lies in our direct contact with our clients. A clinical trust fund e.g. 'Petsavers' gets a large part of its income from direct donations and legacies – all of which are generated as a result of outstanding service provided by veterinary surgeons in practice. It is time we mobilised our client support to help us help them.

Specialist status requires the attainment of further qualifications. Successful practitioner authors, as can be seen from the results of my case studies possess certainly more of these qualifications.

The table below shows the number of veterinarians who have extra qualifications in percentage terms.

	Random sample	Successful	Unsuccessful
Chances of extra qualifications	13%	78%	25%

These results show that even unsuccessful practitioner authors have more qualifications than the norm in the profession. Interestingly my case studies indicate that both the successful (82%) and the unsuccessful authors (100%) felt that extra qualifications should not be a prerequisite to doing in-practice research. However editors were not in agreement with this view.

The philosophy of Claude Bernard includes the concept, in the medical field, that clinicians and students should have contact with well-organised clinical research. I am sure this is true in the veterinary field. Research is an ordered process of acquiring new knowledge by investigations employing methods to test hypotheses. Clinicians have a role in this process. The collection and collation of their observations form an integral part of research in practice.

Investigating clinical problems leads to collaboration with full time research workers in university and institute departments of physiology and experimental medicine. Clinicians receive particular benefit from this multidiscipline approach and the consequent contact with experts. One example would be my attendance with other practitioners at the course, organised on in-practice research, at the University of Cambridge, by Mark Holmes, funded by DEFRA (See Appendix G). Another example would be the seminar at the Royal College of Veterinary Surgeons on clinical research (See Appendix H). From an in-practice research stand point there were several keynote lectures.

Dr Hugh Lewis was speaking with the backing of over 500 practices, when he shared his population and EBM studies. The volume of clinical research generated was impressive. However with such a large organisation, specialists in epidemiology etc were employed. The publishing of such work, which is written up by academics, would be outside the remit of this thesis.

Professor Jonathon Elliot spoke about clinical research being performed at Universities. He stressed that clinicians need to spend less than 50% of their time doing clinical work to perform satisfactory research. This fact also brings such workers outside this study. Academics should always remember one of the best examples of practitioner led research, that of Edward Jenner whose observations on the resistance of milkmaids to smallpox led eventually to the use of a vaccine and eradication of the virus world-wide (Rossdale 1998).

David Black who is a genuine practitioner had a simple definition of research. "A scholarly or scientific investigation or inquiry". He felt that research should be part of achieving further qualifications. One of the findings of my research was that 45% of successful practitioner authors felt the same. As did 87.5% of unsuccessful practitioner authors. On the other hand 82% of editors were not happy with this concept. They were concerned that their journals would be swamped with manuscripts and that their peer reviewers would become unpaid assessors.

David stressed that motivation for research should be driven by clinical curiosity, the desire to improve service by expanding personal knowledge. He was realistic

in describing the weaknesses of practitioner research e.g. poor experimental design. This compliments my own findings. Less than 44% of successful practitioner authors planned their methodology before starting their work. None of the unsuccessful practitioner authors had any idea on methodology. He acknowledged the lack of data presentation, knowledge and scientific literacy experience, shown by practitioners.

David Black stated that access to reference materials was vital. Other authors (Forbes 2000) agree with this statement. 76% of successful practitioner authors had access to a good practice library. Only 50% of unsuccessful practitioners had that facility. David Black also stressed the need for the funding of time to do in-practice research. My research shows that only 9% of successful practitioner authors and none of unsuccessful practitioner authors planned and funded their time. From a financial perspective only 6% of the successful practitioner authors saw a financial benefit, as did 12.5% of the unsuccessful practitioner authors. All the unsuccessful practitioner authors felt they had been let down by the "scientific community". David Black wanted practitioners to be accepted as "scientists". He concluded that this would only happen if practitioners carry out "good science". However my reflective learning indicates that this so called "good science" may not in fact be the ideal way for practitioners to improve their practice. One author (Schon 2003) maintains that the best professionals meet the challenges of their work less by relying on formulas learnt in their final years at college and more on a kind of improvisation learnt in practice. This "reflection-in-action" is one vital way for professionals to foster creativity. Can this type of learning be published in a journal purporting to publish "good science"?

There is a further reason for each member of our profession being involved in research and clinical practice. Our present day veterinary undergraduates are selected on the basis of high intellectual capability. They have to have attained three Advanced levels results with a minimum of 2 'A's and a 'B' before their application will even be considered. It is a paradox that many of them reach advanced standards of education only to be frustrated in practice by a lack of

opportunity to achieve standards which fulfil the aspirations their educational excellence leads them to expect. My case study indicated that 94% of final year veterinary students would like to carry out research. 100% would like to proceed to obtain a further qualification. These findings were markedly different from the findings of authors nine years ago in Australia (Heath et al 1996), who found only 7% of final year students would like to do any research when they qualify. Considering this disparity I have no way of ascertaining whether there is a radical difference in the desires of Australian veterinary students compared to those of British veterinary students or if this a change of attitude of veterinary students world-wide with time. Reflecting on my work in Australia, I think the time explanation is more likely although I have no figures to back this statement up. Equally there is no modern work published to provide enlightenment.

Credit should be given to the veterinary schools who were urged by the Selborne Report in 1997: to not only undertake research themselves but also to provide an environment that exposes undergraduates to the excitement of research and convinces them of its benefits and importance. My research indicates that in this task they have been very successful, with 80% of newly qualified veterinary surgeons wanting to do in-practice research. It can not be denied that in November 1998 a large amount of work needed to be done. However my research indicates that the rate of change is accelerating. Only 40% of 2005 graduates thought they had adequate training to carry out in-practice research. This had risen to 62.5% of 2006 graduates. Veterinary graduates are quite capable of carrying out self-audit. They can acknowledge and appreciate the technical knowledge and the research competence required for the various areas of their professional work and then understand the standard or level that is appropriate for them personally (given their particular circumstances) to achieve within their professional practice. Individuals then have to be able to make an appropriate judgement on whether or not they have all the knowledge they should have or are as competent in particular and relevant skills as they should be to carry out in-practice research. If not then they then need to develop,

undertake and monitor an appropriate self-development plan to remedy any discrepancies.

Dame Bridget Ogilive in the Wooldridge Memorial Lecture stressed that 'Unless the need for radical change that I see occurring in the minds of some of the leaders of the veterinary profession receives the wholehearted support of the members as a whole, the existing severe debilitation of the academic base of the profession will accelerate so that, in the 21st century, veterinary medicine will simply become a practice-based profession that is entirely dependent on a research base staffed only by science graduates'.

She also stated that ' The pace of advance of biological knowledge is such that the primary purpose of universities nowadays must be to produce graduates able to continually update their knowledge. This reality underlies the recommendation in the Selbourne Report that the RCVS should review its requirement on the veterinary schools that they produce veterinary graduates competent to practice without further training. In 1998, this demand has to be unreasonable and unreal. I would suggest that it has always been unreasonable, if you define an educated man as someone who is still learning. My case studies show that 100% of the modern veterinary undergraduates are intending to get a higher qualification. Therefore it is encouraging that the RCVS have reviewed their requirements.

In the context of this project I laid out the competences required by a veterinary practitioner, regarding research. The editorial in the VR in December 1998 points out that the veterinary undergraduate training should place the greatest emphasis on clinical training but that an all-round capability should be nourished throughout the course, with students encouraged to develop not only an understanding of scientific method, but also their powers of deductive thought and communication with others. Once again the veterinary schools must be congratulated with my research indicating that over 60% of final year veterinary students considering that they had had a more than adequate training to carry out research. New graduates having spent a few stress filled months of general

practice were not quite so certain with only 40% considering their training to be adequate for them to carry out in-practice research.

However some authors (Murray et al 2005) found that most veterinarians considered they were not sufficiently academic to have a research career. Specialisation must surely increase, rather than diminish, the expectations of graduates and fulfilment of these expectations will not be found in practice unless changes in organisation and approach enable those, who have some vocation for research can satisfy their ambitions in practice.

There are good reasons for having experts in very small areas of endeavour, because of their contribution to the better service to the 'patient'. However the clinician is required to understand and interpret the complexities and jargon of experts and to translate this understanding into the clinical context of the 'patient' with the added responsibility of explaining to owners and to those in charge of the animals.

The evidence given by experts is often anecdotal or traditional experience untested by peer review. It is important that clinicians publish, as there is a need for audit of procedures performed in practice. These procedures may be of diagnosis, therapy or prophylaxis. The duty of clinicians to publish is one, which, in many respects, is as strong as that of the duty of care of the individual patient (Rossdale 2000). "Knowledge comes but wisdom lingers", said the poet; and wisdom is the product of experience stemming from the aggregate as much as from the individual. Therefore, we must share our knowledge with our colleagues so that we both give and receive advantage of the aggregate. It is possible that this sharing of learning is attainable by reciprocation of reflection-in-action (Schon 2003).

The term research is often confused with that of experimentation. However, recording and collating clinical details (data) against a background of natural biological processes, influenced by disease and/or therapy, as in the handling of each case, is equivalent to the research worker who notes details of the experiment in a daybook.

Similarly, a number of cases present the opportunity to test whether or not a cause and effect relationship was merely one of chance rather than actuality. The academic research worker can limit the variables and thus the size of the experiment. The practitioner does not have this luxury. The practitioner therefore has to have a much wider base of cases. This is particular difficult for the equine clinician, compared with the farm animal or small animal colleague. One authority (Greet 1999) is quoted " In human medicine a series may run to thousands, in small animal medicine to several hundred, but in equine practice we may have only ten!"

Published articles are very important to the practitioner in decision-making in every day clinical practice. Many textbooks are out of date before they are published. The EVJ can be applauded for its compendia, made up of peer reviewed papers, on very important equine topics e.g. colic and lameness. There was a Colic Compendium was in 2002 and the Orthopaedic compendium in 2004.

Evidence Based Medicine (EBM) has come to the fore, as traditional continuing education programs seem to be ineffective at improving our clinical performance. However any serious movement towards EBM requires that a large body of high quality patient-centred research be made available to veterinarians willing and able to assess and critically appraise the quality and applicability of clinical trials (Keene 2000).

The profession is fortunate in having a relatively large number of dedicated practitioners prepared to carry out this assessment without reward. My research indicates that 80% of successful practitioner authors would be willing to help an aspiring author by critically appraising his manuscript. Two thirds of successful practitioner authors would be prepared to have their names available on a list to be circulated to aspiring authors. One editor (Mair 2001) considers the profession is well equipped to progress into the twenty-first century, with such reliable expert opinion available for peer review.

Deciding where clinicians can publish is a topic, which concerns both editors of peer-reviewed journals (Rossdale 2001) and authors. My research indicated that 54% of successful practitioner authors had a specific journal in mind before they started their research. 96% of successful practitioner authors confirmed that clinicians should publish in peer reviewed journals. This same exact figure was found in my previous research (Duncanson 2003).

There are many influences, which should be taken into account by an author when choosing a journal. First the veterinary author should choose the audience. Is it going to be general? The VR is the obvious choice. Is it going to be species specific? The EVJ and EVE are available for horses. My research shows the JSAP mainly goes for articles on dogs and cats. For other species particularly wild life, marine mammals, and zoo animals the VR is likely to be helpful. Cattle and sheep do have specific veterinary associations affiliated to the British Veterinary Association (BVA). However although these associations publish the papers read at their meetings, these are not peer reviewed. The Pig Veterinary society does the same. However their magazine does have a peer reviewed section.

If possible, authorship requires matching with readership and mismatching poses distinct risks. For example, publishing in a journal that accepts a wide selection of topics covering many species and disciplines (e.g. the VR) may, despite a high circulation to veterinarians, entail that the particular work is read by only a very small proportion of subscribers. A good example might be my own paper " A retrospective study of conditions seen in pet pigs in practice in the UK" (See Appendix O) which was rejected by the VR, but might have been accepted by the peer reviewed section of The Pig Veterinary Journal.

A similar problem is to bury one's magnum opus in a prestigious journal with relatively small circulation and, therefore, risk that few of one's colleagues will read the work.

If one has a paper on dermatology it is obvious that submission to a journal on ophthalmology is inappropriate. My interviews with the editors of the specialist journals brought this obvious message home. However If an author chooses a

more specialist audience, there are peer reviewed journals of a high standard just specialising in certain body systems e.g. dermatology or ophthalmology. These are published in the UK but others e.g. gastro-enterology or pathology are only published in English in the USA. The author might prefer something more local.

There is a need to assess whether one is publishing one's work for the readership of the committed clinician or research worker; or in the hope of catching the eye of the generalist. Nowadays, with retrieval systems available through libraries and on the Internet, discerning readers can reach subjects of their interest readily, and will do so. However it is vital for authors to make sure they have a very descriptive title and included five **key words.** This will enable another author to answer an evidence-based clinical question e.g. Does dantrolene sodium prevent recurrent exertional rhabdomyolysis in horses? (Holmes 2007). This author used a search strategy Pubmed/Medline (1966-Jan 2007) (http://pubmed.org/): dantrolene AND equine. The author could conclude that dantrolene sodium is an effective prophylactic treatment without further research. Authors need to consider maximising the chance of acceptance and minimising the chance of rejection.

My research indicates that 52% of the successful and 100% of the unsuccessful practitioner authors were unaware of the influence of references on the standing of a journal. Journals are given an impact factor (IF). The scientific community assess the prestige of individual journals and, therefore, the academic value of the papers in them (Rossdale 2001) by noting the IF of that journal. The IF is calculated from the ratio of the number citations of articles published over the last two years (in the whole literature) to the number of articles published over two years (by a journal). Simply, the more cited the journal the higher is its IF.

A journal that publishes a relatively small number of novel momentous papers will have a high IF compared to a journal, which accepts more mundane material. The EVJ has a high IF just beating the VR. JSAP and EVE are lower down. My research indicates that nearly half the editors of veterinary journals do take into account the source of a paper's references and hence how a paper will affect the

IF of the journal. 100% of the unsuccessful practitioner authors were unaware of this. It is important therefore that unsuccessful practitioner authors factor in the source of their references with the journal they hope will publish their paper.
It is important that authors realise the value of their work before submitting to a journal. A retrospective clinical case study might seem to be very valuable to a practitioner but to an editor a solid piece of research that sheds new light on what is already known would be more useful. This is born out by my research, where I asked the editors to give references for papers, which they thought were particularly good, written by practitioners. Editors showed that they particularly liked well performed research that significantly changed current thinking or modified clinical practice. Groundbreaking discoveries, because they are rare, are at the top of the editor's list. Editors obviously are influenced by the title. Practitioner authors should be aware of this.
My research shows that 40% of successful practitioner authors had not got a specific journal in mind when they started doing their research or when preparing their manuscript. Selecting the right journal is of vital importance.
Only 79% of successful practitioner authors and 12.5% of unsuccessful practitioner authors in my case studies examined the notes for authors for before submitting their manuscript. This is a **vital** requirement. The VR, EVJ, EVE and JSAP each have their own specific notes for contributors (See Appendix Q). However a prudent author also studies the prospective journal in depth to ascertain what type of manuscript they prefer. Also what are the aims and objectives or mission statement of the journal. A scan through two years of a journal will quickly show the ethos and style of that journal.
The fact that the journal has already recently published articles on your topic maybe a mixed blessing. You may well wish to go elsewhere. Equally you may wish to build on the previous base of already accepted and published material. If your references include many citations from that particular journal, obviously the editor will be pleased, as the impact figure for the journal will rise.
My case study showed that 46% of successful practitioner authors had help with their successful paper. Prospective authors would be very well advised to get

outside help from the editor, a member of the editorial board or a colleague who has had greater experience with publication than ones self. (Schein & Fingerhut 2000) conclude, "Getting your paper published is a complex task, which is becoming increasingly difficult. Only a few decades ago, prestigious journals published long manuscripts based on 3 clinical cases; now you cannot publish the most interesting reports outside local or 'throw-away' journals. Rejection rates are extremely high, e.g. 80% for the *BJS*. A key element of a successful submission is choosing the right journal. Assess the value of your manuscript, know the publishing market, study the market, study the target journals and get learned advice".

Many aspiring practitioner authors question whether their idea to write about a certain topic of personal interest will be publishable. Ideas are plentiful, but formulating an idea worthy of publication and bringing it to fruition is difficult. The naïve practitioner author should not be discouraged from 'writing up' a project but rather should use certain guidelines to help focus the development of ideas and realistically define publishable concepts (Sarr 2001).

One of the key issues to writing papers is time (Anderson 2001). Sadly my case studies revealed that only 9% of successful practitioner authors and none of the unsuccessful practitioner authors had planned this vital commodity. Life as a clinician in practice is already notoriously demanding, especially for those who have additional business or management responsibilities. There is no escaping the fact that any properly undertaken research project will create further demands on one's time (Forbes 2001).

On graduation and throughout professional life, the need to generate a basic income and maintain basic professional skills requires a core input of hours and personal effort. This time will vary between individuals (Macwhirter 2002). In addition to this core figure, individuals have discretionary time they can use for recreation and a "second life". How an individual elects to use these discretionary hours is likely to vary throughout their professional lifetime, but might include:

- Family care
- Undertaking a second job
- Community service activities
- Sport and recreation
- Developing advanced veterinary skills
- Developing management skills
- Carrying out in-practice research

Awareness of life course, financial and veterinary career implications in deciding on the mix of core veterinary work and other activities could improve professional outcomes and the harmony between professional and other life spheres.

In order to carry out research, time will need to be prioritised at the expense of clinical, management, family or social commitments. For clinicians holding RCVS specialist status (We have already discussed that the vast majority of successful practitioner authors have extra qualifications), who are obliged to be involved in research and scientific paper production, there is valid argument that time must be made in their working day and, they should perhaps not be burdened with managerial duties as well. The decision to begin a research project should be discussed and agreed with other affected parties (business and domestic partners) before a commitment is made. Usually busy practitioners can divide time in to short blocks involving different tasks, which increases efficiency. Some self-imposed deadlines for completion of individual elements of the work are a useful discipline. These can then fit into the total allocation for the whole project.

It is vital that the researcher remains focused on the project and resists being side-tracked by the numerous other fascinating topics, which will arise en route.

Reflecting on this project has shown me the value of learning from a standpoint of doing rather than being told. A very simple concept but one that I was totally unaware of before starting my Masters and this Doctorate. All through my professional life I had been an avid reader of veterinary journals. In the last 25 years I have attended numerous courses lasting a whole day or more. These I faithfully recorded in the RAL of my Masters. However reflecting on this learning has shown me that this didactic learning was a very stilted. Such learning did help to some extent my delivery of patient care. However my patients benefited considerable more from my own personal reflective learning. My utopian dream (Schon 2003) is to enlarge this to be a dominant part of my veterinary practice and then to be a dominant part of veterinary practice generally. Financially this need not be a real burden to the individual or to the profession as a whole.

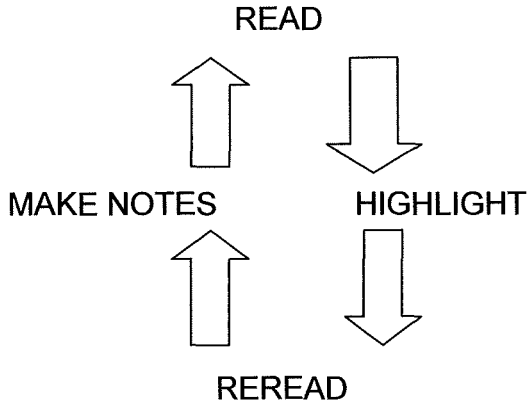
My case studies indicated that only 6% successful practitioner authors and 12.5% unsuccessful practitioner authors had planned the costs of the research. Before a project is started the scope of the work should be delineated. The hypothesis to be tested should be considered. The numbers of samples or parameters which will need to be researched in order to generate a sufficient number of results to give statistical significance will need to be decided. A budget can then be prepared.

There are a number of possible sources of funding available to assist in meeting some of the potential costs, such as those of consumable items. However, it is generally unrealistic for a practitioner to expect his or her time to be recompensed. The funding of veterinary medical research is poor and any serious funding, including research workers' salaries is only likely to be obtained by professional researchers, working full time in research institutes or universities. The one excellent spin-off is that there is no pressure on the practitioner researcher to obtain 'the right results'! This is not the case if there is a potential commercial interest for the research results and a veterinary medicine company provides the funding.

My historical analysis was restricted to manuscripts with only practitioner authors. However collaborative projects may well be a pathway to be considered by unsuccessful practitioner authors? Most clinicians will have acquaintances working within universities or research institutes. Such colleagues will often welcome clinical or pathological material. The clinician may have varying levels of involvement in the research. For instance, he or she may simply be required to submit material, or may be an equal partner in the research or, indeed, may be the key worker, with advice and planning provided by the more experienced research worker. The EVJ's lead on authors, stating in writing their involvement, will help the readers to decide the value of the work.

Care must be taken if a group of clinicians undertake a collaborative project. All the material must be collected, treated and recorded in an identical manner and all contributors must apply a common, written protocol.

77% of successful practitioner authors had access to a good practice library. Only 50% of unsuccessful practitioner authors had that facility. May be one of the reasons why final year veterinary students were so upbeat (94% wanted to do in-practice research) was their easy access to excellent veterinary college libraries. There is no easy way to 'tame the literature'. It is no accident that the literary review appears early in this thesis. Obviously the majority of reading will be completed before starting the project. The literature needs to be critically appraised. This requires a cycle.



It is important not too be selective or dismissive of material which contradicts your hypothesis or results. Such selection will result in rejection by the peer reviewers. Appraisal of other work is made simple if six questions are answered.

1. Why did the authors do the study?
2. How was the study conducted?
3. Which animals were studied?
4. What measures were used?
5. How big was the sample?
6. What was the conclusion?

These questions can be expanded.

1. Why did the authors do the study? Is the hypothesis clearly stated? Is the study about efficacy or effectiveness? Consider rasping of sharp enamel overgrowths on horses cheek teeth. To study efficacy all the horses have to have clearly charted overgrowths, all of which were rasped. To test effectiveness one might look at a simple short-term outcome, such as the cessation of quidding.
2. How was the study conducted? Case series, before and after studies and randomised controlled trials probably represent an order of ascending scientific merit, but even in a controlled trial you need to think about how animals were chosen and allocated.

3. Which animals were studied? Demographic data may be important. Was the study based on a small local population or individuals referred to a referral centre? Does the study represent the full spectrum of a disease? Are there clear inclusion and exclusion criteria?
4. What intervention and outcome measures were used? Compliance is important in most studies. Withdrawals, dropouts, crossovers and poor compilers all need to be considered, to see how much influence these factors might have had on the final results.
5. How many refers to statistical significance and sample size. The most important question here is whether the authors considered the methods of analysis and necessary sample size before starting the study. Watch out for the popular trick of carrying out multiple analyses on a data set. This increases the likelihood that a significant result will be obtained by chance alone. Small sample size leads to trials with weak power to detect important differences in outcome. The so-called 'type 11' statistical error is common in surgical papers, where the study is too small to detect statistically significant differences.
6. At the end of the paper, you must ask the question, so what? Is all of this of any real significance? A statistical increase in survival with radiation therapy with dogs with neck tumours may be 69 days, but is this really important, humane or worthwhile?

At the start the type of submission should be decided. Will it be a review article, case report, technique paper, cohort study and case series, meta-analysis, prospective clinical study, or a research paper? These will all be peer reviewed if for a peer reviewed journal. However the practitioner author may be tempted to write an editorial. This will be fine if it is requested (See Appendix E). Unsolicited editorials submitted independently are not well accepted. In contrast letters to the editor are more readily accepted for publication. Indeed the editor may suggest that a short communication be resubmitted as a letter. My article on 'Conditions seen in pet pigs' is an example (See Appendix O). It was refused as a short

communication by the assistant editor of the VR but a suggestion was made that it might be accepted as a letter to the editor (See Appendix P).

Review articles are likely to be commissioned by the editor. In my case studies 55% of editors claimed to commission such articles. However an inexperienced practitioner might opt to write a review article if there was a gap in the recent literature or there was a controversy. Personal experience would not be required but a great deal of library research would have to be completed. There would be a large amount of educational 'spin off' for the author but interest from an editor would be unlikely.

Case reports are often very difficult to justify and get published. Editors often require a minimum number of cases to prevent the 'I have never seen one before syndrome'. Just because this is 'the first recorded case', even if true does not warrant publication. In my case studies 36% editors admitted that they had no mechanisms in place to verify such a claim. Editor number five stated that he would not be prepared to publish any clinical report unless it was 'very topical'. A case report should not just be novel, unique or timely, but of sufficient broad interest to capture a large proportion of the readership. A new neoplasm to a species or a new but clinically unimportant process is not sufficient justification for publication. The number of case reports in the JSAP has risen in recent years to the detriment of papers. The editor is keen to reverse this trend but she is hampered by the lack of papers submitted.

The key concept of a technique paper is a unique or new technique, not just a particular technique perfected by an experienced surgeon, which has been taught to others. It requires large numbers with good follow up. It also will require a strenuous literary review.

A cohort study and case series represents the largest category of the veterinary literature. Writing up a series on the treatment of a particular disease requires a focused, well-defined problem with sufficient numbers, follow-up and quantifiable outcome criteria. An aim to prove a hypothesis markedly strengthens the value of the article. Such articles are more likely to get published if they offer a new approach rather than just resting on the clinical experience of the authors.

Meta-analyses are statistical summaries of the results of all studies carried out on a particular topic. Obviously there must be sufficient previous studies. These previous studies need to have similar treatment groups and similar measured outcomes. The methodology and particularly the statistics have to stand up to rigorous validity testing.

Prospective clinical studies if they are randomised, also have to have a valid statistical design. There must be sufficient numbers. Ideally the study should be blinded. A hypothesis–driven study will carry much more weight than a post hoc analysis. This type of study may be considered the 'gold standard'. However unless the statistics are valid after rigorous scrutiny, the whole study will not be worth publication. The success of randomisation depends on two interrelated processes (Schulz 2005). The first entails generating a sequence by which the animals in the trial are allocated to intervention groups. To ensure the unpredictability of that allocation sequence, investigators should generate it by a random process. The second process, allocation concealment, shields those involved in the trial from knowing upcoming assignments. Without this protection, investigators have been known to change which animal gets the next assignment, making the comparison groups less equivalent (Schultz *et al* 1995). For example, suppose that an investigator creates adequate allocation sequence using a random number table. However, the investigator then affixes the list of that sequence to a bulletin board, with no allocation concealment. Those responsible for admitting animals could ascertain the upcoming treatment allocations and then route animals with better prognoses to the experimental group and those with poorer prognoses to the control group, or vice versa. Bias would result. Allocation concealment must be adequate. This should not be confused with blinding. Blinding concentrates on preventing study personnel from determining the group to which animals have been assigned. It is perhaps most critical that the individual making the assessment of outcome, good or bad, is unaware of the treatment group allocation (Devereaux et al 2005).

Authors should declare the methods used. Peer reviewers and readers should not have to guess. There is a body, ' Consolidated Standards of Reporting Trials'

(CONSORT) to which prestigious journals belong, which regulate trials. Readers can attach more credence to trials published in such journals. Equally authors should be aware that they must include information on blinding at all levels in their materials and methods section.

Nonrandomized studies require a clinically relevant topic with either an established clinical outcome or a well-accepted control group.

Research papers are very difficult for a practitioner to prepare, as a laboratory is required. State of the art techniques will need to be used which are unlikely to be able to be mastered by a practitioner.

The best advice for any practitioner must be to obtain the opinion of a seasoned author before beginning the research. Luckily my research reveals that 80% of successful practitioner authors would be happy to help a colleague and 63% would be happy to have their names put forward on a list to be published in reputable journals e.g. the VR, EVJ, EVE and JSAP.

In 1999 EVE took an important step forward by inviting colleagues to send photographs of cases together with details of the case. The editorial staff would then assist them, if requested, in compiling the report under their name (Bramlage 1999).

Deciding where to publish is a problem for the inexperienced practitioner author. 54% of the successful practitioner authors had a specific journal in mind before starting to write their manuscript. There was a similar percentage for referral practitioners. 100% of the unsuccessful practitioner authors had a specific journal in mind. I conclude that it maybe prudent to reconsider which journal to approach on completion of the project. It is important however to change the format of the manuscript to concur with the 'instructions for authors'. All four of the peer reviewed journals, which I have investigated have different 'instructions for authors' (See Appendix Q, 1,2,3 and 4).

There is a wide spectrum of publishers, extending from the top end of the market, namely peer-review journals of the highest reputation and quality and, at the lower end, magazines and journals which apply the briefest scrutiny only (Rossdale 2001). As one editor observed "Publication of work can be achieved at

some level in most, if not all, cases." There is a place for non-peer reviewed journals and newspapers on the veterinary stage. The author is an avid reader. However their place and the preparation of an article for such publications is outside of the remit of this research.

As a practitioner author the bottom line of writing a paper is to communicate with the readership; and, in particular, with one's colleagues who are clinicians. 96% of practitioners regularly read peer reviewed journals (Duncanson 2003). Time is extremely valuable to practitioners. Authors should bear that in mind and therefore write:

- In short sentences
- Paragraphs of reasonably restricted length
- Never use two words where one will do
- Write what you want to communicate and do not be discursive or digress on the message you wish to impart.

Headings should be used. These should be divided into primary headings:

- Summary
- Introduction
- Materials and methods
- Results
- Discussion
- References
- Acknowledgements
- Manufacturers' addresses.

Secondary headings and even tertiary headings should be used to help clarify the text, particularly the materials and methods, and the results.

The summary should include the hypothesis under test and the means in which it was tested. A very brief description of the results and the conclusions drawn. This is different from an abstract, which should be a mini version of a paper having a brief summary of each main section i.e. introduction, materials and methods, results, and discussion. It should never give any information, which is not in the paper.

The introduction should supply sufficient background information to allow the reader to understand and evaluate the results without needing to refer to previous work. It should also supply a rationale. It should be written in the present tense. It can state the problem, the pertinent literature, the method, the main result and the main conclusion. However, authors should avoid using the introduction to discuss previous work in any depth. This should appear in the discussion.

The materials and methods should be written in the past tense. They should be precise. However the method must be full unless it is standard procedure. In this case a reference should be given.

No results should be given in the method. Equally no method should be given in the results although you can give an overall view. The past tense should be used. You can present data, which you did not obtain provided that is clearly stated. The results section maybe short. The results should not be discussed. The introduction, materials and methods will tell why and how you got the results. The discussion will say what they mean. The discussion should be as succinct as possible. The objective of the work and the reason for it being undertaken should be clearly stated. Claims should not be made which can not be substantiated from the data.

The conclusion should contain a modest statement of how the work has contributed to knowledge. It could also include where further work would be useful. Hints can be made about clinical application.

The references are important. They should collaborate all of the major statements made in the paper. However they do not have to be totally inclusive. Judgement, of which paper to quote should be based on the importance of that paper. The most recent references are particularly important.

The completed manuscript – The final Product – lies in front of you on your desk. What happens next? Do not be tempted to cram it rashly into an envelope and bear it with speed to the nearest post box. A moment's quiet contemplation at this point may avoid needless delay and embarrassment at a later stage when referees and editors (Murie 2001) uncover obvious, simple faults.

My research reveals that 87.5% of unsuccessful practitioner authors did not check their work against the 'Instructions to Authors'. Each journal has different instructions so revise your manuscript if you are approaching a second journal. Check the whole manuscript for English language spelling either English or American styles as appropriate.

Agree on the authorship. This should have occurred at a very early stage. However there is still a last chance to consider this serious matter. The award of authorship should be given only to those making a substantial contribution to conception, design, analysis and writing of the study, or collection of data. For those making lesser contributions, it may be that an acknowledgement is more appropriate. If your author total seems excessive, it is probable that editors will question the roles played by these individuals. The EVJ has a specific form (See Appendix A).

All authors are generally invited to sign a letter of submission to accompany the manuscript. This letter is important and should be considered carefully. It will likely to state that: -

- That the work has not been published elsewhere.
- That the work has not been accepted for publication elsewhere.
- That the work has not been simultaneously submitted elsewhere.
- That a foreign language version has not been published accepted for publication or simultaneously submitted elsewhere.
- That the author has no financial interest in the work.
- That the author has no potential or actual political interest in the work.

In summary remember it is your professional signature which is being signed.

My research indicates that 6% of successful practitioner authors gained financially from their paper published in a peer reviewed journal. One hopes that they declared that financial interest when they submitted their manuscript.

My research indicates that 45% of successful practitioner authors considered that a piece of in-practice research should be included as a compulsory module in the new RCVS certificate. This would have to be clearly stated when the manuscript was submitted. This would be particularly important as 80% of these successful

practitioner authors thought that the acceptance of such a manuscript should be used as a method of assessment. All the editors of peer reviewed journals were not in favour of such an assessment. They felt that potentially their journals could be swamped with such manuscripts.

Like the successful practitioner authors, 45% of new graduates also considered a piece of in-practice research should be included as a compulsory module in the new RCVS certificate. However 75% of final year veterinary students were more hesitant. Careful groundwork will have to be completed before implementation of such a scheme. Space in the peer-reviewed journals will have to allocated. Funds will have to be made available to these special peer reviewers. Normally in the four journals studied peer reviewers are unpaid. However I feel exceptions will have to made under these special circumstances.

36% of editors had no mechanisms in place to guard against the ever-increasing problem of duplication. 84% of successful practitioner authors carried out a literature search before writing their manuscript. Referral GPs were more diligent. Only 25% of the unsuccessful practitioner authors carried out a literature search. My case studies with the editors of the peer reviewed journals revealed that 91% of editors performed the initial screening. 100% decided on whether the content was of interest to their readers and whether the format was adequate. 73% of editors decided whether the scientific standard was adequate. The standing of the author did not influence 91% of editors, although 45% were influenced by the source of the references. It is obvious that the initial impression of the editor is very important. Many manuscripts do not get any further.

100% of the editors expected the author, before submitting a manuscript, to have read the journal's instructions for authors and to have implemented these instructions. Sadly none of the unsuccessful authors had carried out this straightforward task.

The editors stressed that they directed specific attention to copyright requirements and the accuracy of references. However only 45% took the actual source of the references into account. 48% of successful practitioner authors

were aware that the source of references was likely to be important to editors. None of the unsuccessful practitioner authors were aware of this fact.
Only 25% of editors required a clear definition of author responsibility. However all of the remaining 75% felt that this was likely to change.
If the editor is satisfied the manuscript will be referred to the reviewers or referees (normally two). Referees are generally established experts who themselves have a track record in publishing learned articles and who are well regarded by the journal. They are rarely practitioners. One editor said "a greater than 5% input by practitioners would be unlikely in any year". However the journal would welcome more but it was difficult to get practitioners as they generally had little time for such voluntary work. Another editor suggested that the reviewing exercise should form a scientific debate between peers.
Reviewers are asked to make suggestions that will result in the improvement of the submission and these suggestions are passed to the author. The author should respond to these suggestions either by inclusion of the changes in the revised paper or by providing a detailed response arguing the case (with reference support) for why they feel the changes would be inappropriate. It must be remembered that reviewers are selected for their expertise in a particular field, and this may only reflect a single aspect of the paper e.g. imaging findings or statistics; reviewers may therefore offer different opinions on a paper and suggest different alterations. None of the peer-reviewed journals which I studied paid peer reviewers. Therefore at the present time their advice is totally impartial.
100% of editors said they would be happy to accept as many papers as possible without revision, if requested by referees. Sadly this was rarely the case. Most papers achieve eventual acceptance only after revision in the light of referees and editor's comments.
Normally the author is offered the opportunity to resubmit after revision. The author should deal with **all** of the points made and state this in a covering letter. Editors and referees may make an error. The covering letter should state quite clearly why the author can not or will not make the changes requested. Any author doing this must be very confident of his argument. Arrogance is a sure

way for guaranteeing rejection. Normally the changes suggested by the referees will enhance the paper. It is in the author's interest to move on quickly towards publication. The editor of the EVJ must be congratulated in his initiative of publishing the date of when a paper is presented and also the date when it is accepted.

The author will receive page proofs after acceptance, before publication. These will show the layout of the text and illustrations. They should be very carefully checked. However delay at this stage should be avoided. An erratum can correct mistakes, after this, if it is the journal's error, or a corrigendum, if it is the author's error, in the next edition. Neither is very acceptable, as most readers in the future will be unaware of them. Proofs are not intended for major alterations.

It is normal for the journal publisher to request the author to assign copyright to the publisher. Very rarely the editor may allow the dual publication in another language to help disseminate knowledge. However rarely is this justified. Full disclosure must be made.

Most journals allow correspondence relating to work that has recently been published in the journal. Normally the original author is encouraged to reply. This is very helpful and adds to the peer review process.

Dealing with the rejected article is quite a different scenario. In my research I found a third of eventually successful practitioner authors had their first paper rejected. This figure was not influenced by whether the author had additional qualifications. 41% of those having rejected papers had had outside help with that paper. On the other hand none of the unsuccessful practitioner authors had had outside help. Two authors maintain that the vast majority of scientific publications are rejected initially by journal editors (Guillou & Earnshaw 2002). The editor of the VR does not agree with this statement. Rejection may be more common in the general scientific field compared with the veterinary field.

Very few 'first submissions' are published without further modification. The rejection of a manuscript should not be regarded as a personal criticism directed at the author by the referees and editor. Inexperienced authors often find the review process most difficult. It can be disheartening for practitioners to put in an

immense amount of time and effort preparing a publication only to have it returned requiring major changes. Authors would do well to remember that the appearance of a substandard report in print not only runs the risk of disseminating less than ideal practice or misinforming readers, but also reflects poorly on them as well as the journal. Rejection paranoia should be unfounded. However it was certainly shown by all the unsuccessful practitioner authors in my case study.

However it is clear that reviewers also have a responsibility to provide the same scientific rigour to the process as is required by the authors. Therefore reviewers should be prepared to provide evidence and references to support claims and statements they make. At the end of an optimal peer reviewing process both author and reviewers should be satisfied that the submission has been approved. I can reflect on the process of preparing this report of my work-based project. My initial presentation was recommended as a pass subject to major conditions. The assessors of my work gave clear written comments, which were very informative. Once these revisions had been satisfactorily completed the project could be formatted in accordance with the requirements.

The unsuccessful authors were shown to be older than the successful practitioner authors, who were in turn older than the current veterinary population. The unsuccessful practitioner authors had failed to do the groundwork before writing and submitting their paper. Only 25% had done a literature search. None were aware that the source of their references was relevant, nor had they defined a methodology. Also none had any suggestions of a recent paper which they had read which could be used as a 'role model' for their attempt.

How should an unsuccessful author proceed when his manuscript has been returned with a polite letter of rejection from the editor (See Appendix P)? The first thing to do is to determine the nature of the rejection; that is, whether the article has been rejected totally or whether there is still an opportunity to resubmit after appropriate modification. Clearly it is extremely important to read the editor's rejection letter carefully. If the article has been rejected irrevocably by the

journal then the editor's letter will say so and will indicate the reasons. 37.5% of the unsuccessful practitioners in my case study said that the reason given was that the number of cases were too few. A further 37.5% said that the editor was not happy with the methodology. 12.5% of the unsuccessful practitioner authors said the editor had stated that the statistics were not valid. A further 12.5% said that the referees were not happy with the surgical method.

There are other reasons why a paper would be rejected for publication:

- The study did not examine an important scientific issue.
- The study was not original.
- The study did not actually test the author's hypothesis
- Practical difficulties led the author to compromise on the original study protocol.
- The study was uncontrolled or inadequately controlled
- The author has drawn unjustified conclusions from his data.
- There is considerable conflict of interest
- The paper was so badly written that it was incomprehensible

It would be futile for an author, however strong the arguments he puts forward, to resubmit a manuscript to a journal after a direct rejection.

The author's time would be better spent by careful examination of the reviewers' criticisms with the aim of responding to the comments and improving the manuscript before submission to an alternative journal. Even when the referees' comments appear to be supportive it should be appreciated that the editor's final decision results from a synthesis of two reviewers' critiques, which will normally be sent to the author, and each referee's structured assessment, which will not normally be sent to the author. Also the editor will have to consider other factors such as originality, timeliness, study design, analysis of results, statistics conclusions and even pressure of space in the journal (Dunn 2007).

The rejection letter may include an invitation to resubmit a modified version of the paper after changes suggested by the referees. After such changes publication is not guaranteed but is certainly more likely. It is important to resubmit the

manuscript promptly after the changes as most journals have a time limit and if this is exceeded they will consider your manuscript as a new submission. Sometimes there will be a conflict of suggested changes by the referees and/or the editor. The author will need to consider these very carefully. However the author should be aware that the editor's opinion carries considerably more weight. When resubmitting it is important to be as helpful as possible to both the referees and the editor. All changes should be itemised and described in a separate letter. Obviously if they can appear in the manuscript in red, that would be helpful for the editor. A useful example can be seen in Appendix X3.

It is very important that **all** the criticisms are addressed. Failure to address a criticism will not help an author's case for publication, unless an extremely powerful argument is used.

Editors value their referees and are very mindful of the time, which they have to spend on a manuscript. Referees are normally unpaid. It is important that authors are not argumentative. Authors are normally happy to change style and presentation. Equally suggestions on changes to the statistical analysis are usually accepted without comment. However my research has indicated that there is a total reluctance to change the study design which would entail re-examining the clinical scenario. None of the unsuccessful practitioner authors were prepared to re-write the article, if asked to resubmit. All were prepared to resubmit to a less influential journal. This would include journals whose peer review was open to criticism. Unsuccessful practitioner authors could submit their rejected manuscript in a different format to a veterinary newspaper. This however would be outside the remit of this thesis.

It is apparent that it is vital for naïve authors to approach more experienced colleagues before the work has started to decide on a methodology or study design. The chances of a successful publication in a well-respected peer reviewed veterinary journal are almost nil, if the final draft has been completed before a more experienced colleague is approached.

My research has indicated that an unsuccessful author rejects the reviewers' comments, which should be of great value to an inexperienced author. The editor

and the referees are perceived as 'the enemy'. It is vital to dispel this myth. Unsuccessful authors should heed all the comments before resubmission to another journal. This will pre-empt a repetition of the first reviewer's criticisms. The article should be submitted to a new journal as soon as possible. Clinical science has a relatively short half-life and the sooner the article is in print the better. It should be remembered that each submission-rejection cycle might take 3 to 6 months. However the editors of the four journals, namely VR, EVJ, EVE and JSAP should be congratulated because their cycle is noticeably shorter than the norm. Whether or not the paper should be submitted to a journal that has a lower profile or IF than the one to which it was originally submitted is a matter for individual judgement. A decision to send it to a higher profile journal is risky because the chances of rejection will be correspondingly higher and this will inevitably incur delay in final publication. However the choice of journal involves a consideration not only of IF but also specialisation. More experienced authors will be able to assist in the choice of journal. Once the new journal has been selected it is important to study the journal in-depth so that the manuscript conforms not only to the 'notes for authors' but to style of the journal. Editors do not like being second choice. Manuscripts, which are obviously prepared for another journal, will be easily recognised by an editor. However veterinary practitioner authors are well placed because none of the editors of the four journals, VR, EVJ, EVE or JSAP are small minded. They have the dissemination of veterinary knowledge as their priority. They are well aware that their journals are widely read and respected. They want to maintain that standard. They will only reject an article if there is a valid reason to do so, not because of piqued pride.

Unsuccessful practitioner authors were very reluctant to come forward to be interviewed for my case study in spite of general open letters to the veterinary press (see Appendices B & C), individual letters from editors (See Appendix D), an editorial in JSAP (See Appendix E) and my article in SPVS Bulletin (See Appendix F). I found that there is a deep feeling of having been let down by the system.

The message needs to be given out to unsuccessful practitioner authors that the majority of articles are published somewhere eventually. They should not let them gather dust. The longer the delay the more likely is further rejection.
There is no doubt that submitting a manuscript to a peer reviewed veterinary journal is a Herculean task for a practitioner. Why did the successful practitioner authors go to all that effort? 85% stated that they carried out the research to satisfy an inquiring mind. This may indeed have been their goal to start with. However it is likely they wanted to share their results with their peers and even in the fullness of time wish to achieve greater recognition for their work. It was important that from the outset they maintained good records and stored data, illustrations and samples in a form, which could be accessed at a later date.
80% of the successful practitioner authors claimed they gained personal fulfilment from performing in-practice research. With the current moves towards increased postgraduate training, qualifications and specialisation, even if personal fulfilment is the aim, practitioners should be encouraged to write up their findings, present them for review by their peers and gain recognition for their work. Academic challenge is hollow if the findings are not written up and presented for review.
Only 6% of the successful practitioner authors used their research to solve a clinical dilemma for their own personal financial benefit. This type of research is rare. However knowledge and ability may well increase the practitioner researcher's income in the longer term.
69% of successful practitioner authors used their in-practice research to solve a clinical dilemma for the good of the individuals, which suffer from this condition. This is a very honourable aspiration. These clinicians should have every encouragement to carry out such research and publish their findings. It is very encouraging that the RCVS (See Appendix H) and DEFRA (See Appendix G) have both launched such initiatives in the last few months.
Although many clinicians have no intention of gaining additional qualifications, 45% of the successful practitioner authors in my survey were intent on obtaining additional qualifications, when they embarked on their first research project.

A research project, if it is conducted and published properly, may be used retrospectively in support of a further qualification. An example would be the RAL the entire SPVS Masters Group prepared for their MSc qualification. The importance of publication in a recognised peer-reviewed journal cannot be over-emphasised.

Practitioners, who are contemplating further qualifications, should clarify their objectives and consider what qualifications would help them to achieve these objectives. Hopefully the new proposed modular certificate by the RCVS will be top of their list.

My interviews with final year students and new graduates were very encouraging. 100% of final year students were planning to obtain further qualifications. Work overload in a few months of practice had dropped that figure to 90% of new graduates. However that is still very encouraging. Young veterinary surgeons still see that further qualifications are a route to climbing the veterinary tree to referral practice and specialisation. This is triangulated with my case report findings that referral GPs were 80% likely to have further qualifications.

The desire to carry out in-practice research was very strong with 94% of final year students planning to do in-practice research. This figure only fell to 80% after a few months in practice.

My previous research (Duncanson 2003) indicated that only 7% of veterinary surgeons had published any work. However my interviews revealed that 73% of final year students would like to publish in a peer reviewed journal. Interestingly even after the rigors of a spell in practice this figure rose to 90% for new graduates.

The goal of publication in a peer-reviewed journal is therefore very important to new graduates. The undergraduate veterinary course at Cambridge University lasts for three years. The undergraduate then graduates having attained a BA. The next three years are considered to be postgraduate learning. The courses at the other five veterinary schools in the UK do not have this division, as the standard course is only five years. However students can intercalate in their third year to obtain another qualification. The main point is that the final three years of

study at all the veterinary schools is post graduate and should be considered as level 4 learning. Much of this learning is still didactic but recently there have been changes. It is therefore easier for the modern veterinary graduate to adapt to being a reflective practitioner than his older colleagues. There are many arguments in favour of teaching veterinary students the early formation of the habit of reflecting on practice. The modern student is encouraged to be critical of their experiences in their training. The danger is that as they do not have access to the body of knowledge and experience in the day-to-day work so that when things appear to go wrong their reaction is to examine their own deficiencies rather than consider how the whole scenario might be culpable. Therefore there is a need to mentor new graduates, who may feel they are alone on in practice. It is important for them to realise they are not the only individuals experiencing these problems.

Chapter 7 - meta reflection of self

During my work-based project of an investigation of the difficulties faced by practitioner researchers in publication, I have carried out a considerable amount of personal learning. This learning was obtained from my personal difficulties in not only carrying out rigorous research methods, but also in bringing together the results into a publishable format. If I make the premise that I am a successful practitioner and a successful practitioner author, how can I justify that? If I can justify that premise, how can I review my learning's to help others attain such a state? Equally how can I show that such a state is professionally worthwhile?

My 'Recognition and Accreditation of Learning' (RAL) for my MSc demonstrated some considerable learning as a general practitioner. Therefore I think it is reasonable to say that I am a successful practitioner. I could use other criteria to judge success. I could show records of my client base. I could show records of clients who are satisfied with my service. I could show records of the numbers of patients who have benefited from my treatment. I could even show copies of the practice accounts, which have been sent to the Inland Revenue. However in these considerations of success I have not listed the manuscripts I have had accepted for publication. Therefore I accept the premise that success, as a practitioner is not measured by numbers of publications. It is well known that veterinarians in the academic world do not get advancement without publication. On the other hand by definition, if a practitioner wishes to become a successful practitioner author he must publish a manuscript. My research indicates that only 7% of practitioners in the profession have published manuscripts in a peer-reviewed journal and yet 90% of new graduates would like to be successful practitioner authors. My research and my own personal learning's indicate certain resources are very helpful for publication. The most important is the guidance of an experienced colleague. To aid others in the profession I have published a page on the website of the Royal College of Veterinary Surgeons giving full

details of successful practitioner authors who would be prepared to help a colleague in such an endeavour. I have recruited these practitioners as a direct result of my research.

My research has indicated that the provision of extensive practice library is a useful building block to help publication. I have written a book which 63% of successful authors and 87.5% of unsuccessful authors consider would help them with publication. My own personal learning's have enabled me to write such a book.

So I can state that I consider the first two premises are true i.e. I am a successful practitioner and author, and that my personal learning's have helped others within the profession.

The third premise was that being a successful practitioner author was worthwhile. I can justify this from my own learning and my research. I have found that becoming a successful author has required two types of learning. First of all there is the clinical aspect of the contents of the manuscript. I have had to research the literature on the clinical subject thoroughly and have had to actually carry out the clinical aspects of the study. The result is that I am considerably more knowledgeable on the whole realm of that condition and can offer not only superior patient care but also better advice to the client. I can develop the clinical aspect further using "Kolb's" cycle. This will insure even more advanced patient care and client satisfaction. The second type of learning has been in preparation of the manuscript. I have had to set out my objectives for the study. I have had to use a sound methodology, which will stand up to scientific scrutiny. This has required studying basic methodological principles. The collection of my data has required yet more clinical cases and hence enhanced my clinical acumen further. I have had to study the various methods of analysing my data. I have had to carry out yet further reading so that I can discuss these findings in a realistic and convincing manner. After this discussion I have had to draw logical conclusions. These conclusions will be used in a further "Kolb's" cycle and will yet again increase the level of patient care. I have had to learn to proof read the manuscript before submission having carefully studied the "instructions for

authors". This is after a thorough study of the journals to decide on the correct journal for the subject matter of my manuscript and for the source of my references.

The manuscript might be accepted as prepared. This is extremely unlikely. Various modifications are likely to be suggested by the peer reviewers. This will encourage me to further learning to allow for agreement for publication. From my own personal experience I can see the dangers of taking criticism of one's manuscript by editors and peer reviewers personally. This is a fundamental learning lesson. Unless an author can learn this lesson that author is likely to remain unsuccessful. The advice and critique of this work-based project by the examiners has been extensive. My learning has enabled me to use that advice to increase the power of this project. The project then can be more useful to the profession.

Reflecting on my case study of successful practitioner authors I consider I had a very high recruitment response rate. This was 95 out of a possible 215. This indicates to me that I was lucky in that I was dealing with a group of practitioners who shared the same passion as myself. This was confirmed by the large percentage, who were prepared to help naive authors to achieve their goal of publishing a paper in a peer reviewed journal. I could almost think on this large group as critical friends, who were helping me to hone down the questions, which I was trying to address.

The very fact that they were **successful** authors meant that they had been on the same journey as me. If one makes a comparison with overland travellers, they had shared the delights of viewing new sights but also had shared the trials of long border delays. Obtaining the copy of a journal, which contains your paper, is certainly a delight. Waiting for the peer review rejection cycle is certainly a trial. I can see on reflection how the large amount of data I gathered from these successful practitioner authors has not been fully utilised. The successful authors suggested over a hundred papers written by practitioners, which could be used as models for aspiring authors. These papers should be analysed to try to

categorise why they are models. The work required to do this would be a doctorate in itself. On reflection I can see the attraction of facilitating learning sets to push work based learning and work based research further forward. I would enjoy trying to answer the question "what factors make a good paper written by a practitioner?" A case study such as mine raises many more questions than it answers.

My case study of unsuccessful practitioner authors gave me insight into the difficulty of performing in-practice research went the initial methodology was found to be flawed. I expected the editors of the journals to be able to give me names and addresses of unsuccessful practitioner authors. There would then be a boundary to my enquires. I would have numbers. I could then state 210 practitioners had been successful in publishing in these four journals in the last ten years and X practitioners had been unsuccessful. I could then state that Y unsuccessful practitioners out of X had taken part in my case study. The recruitment rate would then be known.

For ethical reasons the editors were unable to furnish me with this information. Certainly they assisted me as best they could by publishing letters and editorials asking unsuccessful practitioner authors to contact me. They also wrote to all the authors when they sent back an unsuccessful submission. On reflection if I could have used these methods of recruitment for the last ten years I might well have increased my recruitment. However this would have severely complicated my data. A third of my successful practitioner authors had been unsuccessful initially. Where would these authors have appeared in my data as unsuccessful or eventually successful authors? There was therefore a gap in my data, which I could not share with my colleagues and create knowledge. I had to accept that. I learnt from that. I learnt that by discussion of this weakness in my data, I could still accomplish useful research.

The eight unsuccessful authors gave me some very useful data. I have no way of knowing whether they were a small group because my recruitment strategy was weak, or because in reality there was only a small number of such unsuccessful authors. It will be interesting to see if the recruitment to Mark Holmes' course

which is fully funded by DEFRA (Appendix H) will start to diminish. Certainly the first course, which I attended, was in the main part filled with already successful practitioners.

Sadly another reflection from these case studies was that repeated failure brings initial disillusionment. This is followed by anger. The editors of the four journals, VR, EVJ, EVE and JASP, who I know as helpful kind individuals who are dedicated to publishing good science from whatever source, who are certainly not biased against practitioners, are seen as the enemy. Once this barrier has be erected it is difficult to dismantle. A comparison can be drawn with the academic veterinary lobby being reluctant to accept more modern methods of assessment of modular certificates, which in their eyes are expensive and difficult to arrange.

I was interested in my reaction to the evidence from the editors, that if one of the criteria for obtaining a RCVS modular certificate was publishing a paper in a peer reviewed journal, it would overload the already compromised system. Although I had had a passion for this type of assessment, I could accept their arguments. However I have a passion to organise a think tank at the RCVS to discuss this idea. Various questions could be postulated and then hopefully research could be commissioned to answer them. Before doing this doctorate I would have been quite happy to accept the answer to be supplied by a committee of "wise men". However on reflection I now would be very unhappy with such a scenario. I would need the decision to be based on sound research performed by dedicated practitioners. I would expect these researchers not to be shy of disseminating their results.

If we accept the premise that by sharing our experience and the data from our research work we create knowledge, then we need to utilise that knowledge to promote change. My presentation to RCVS research committee to promote in-practice research was such a dissemination of knowledge. This was then accepted and allowed for change in the profession e.g. a list of successful practitioner authors to be published and regularly updated on the RCVS website.

As stated earlier I found the editors of the four journals the VR, EVJ, EVE and JSAP to be very helpful not only to my research but also to practitioner authors.

My reflection on the case study interviews of newly graduated veterinary surgeons was that I was dealing with a group of highly motivated individuals. They were experiencing high stress levels which motivated me to start a mentoring process. Peer group enthusiasm may well help new graduates. How to maintain that enthusiasm is beyond the role of this doctorate. Certainly the tree of lifelong learning as proposed by my doctorate group colleagues is a good way forward. The plan is for newly qualified veterinary surgeons to partake in their first year in practice, the Professional Development Phase (PDP), before enrolling in a new modular certificate.

Obviously the experience gained as a graduate at college has a vast effect. Research at the RVC (Brownlie 2006) shows that 19% of students who intercalate during their undergraduate course, subsequently go on to study for a PhD, where only 5%, who had not intercalated, went on to study for a PhD. Final year students were even keener than new graduates on performing in-practice research. Included in the new undergraduate training in third year is a mandatory course on research methodology (Duffus 2006). However this does not explain the drive to do in-practice research and get a manuscript published. It also does not explain the desire to obtain further qualifications. Once again I reflect that there is a vital need for research on these findings and build on the data I have collected.

Chapter 8 - conclusions

General Conclusions

My target audience is the veterinary profession, particularly the practising arm of the veterinary profession. The Royal College of Veterinary Surgeons (RCVS) represents the whole profession with the practising arm of the profession represented by the Society of Practising Veterinary Surgeons (SPVS). My project is submitted to the National Centre for Work Based Learning Partnerships (NCWBLP) at Middlesex University through the Professional Development Foundation (PDF).

I hope my work will be linked with the others in my learning set (The SPVS Doctorate Group), giving it more impact, so that it can be used by the RCVS to guide them in the further education needs of the profession in the next decade.

I hope my book will be widely read throughout the profession. Unsuccessful practitioner authors should take to heart the points in the book and the advice from senior colleagues.

I conclude that having an article published in a major peer reviewed veterinary journal should be considered for use as part of the assessment for the CAVP of the RCVS. However as this is not the wish of the majority of the profession at the present time. Care should be taken before implementation. The fact that it is also not the wish of the editors of the peer reviewed veterinary journals needs consideration. The new graduates and the final year veterinary students are in favour of such an assessment. It is therefore prudent for proper arrangements for extra journal space to be allocated. The profession will then be ready to face the changes suggested.

Submission on line has been implemented by all four journals. This has considerably increased the number of submissions. The editors are concerned as they have a restriction on the number of pages from financial restraints. Therefore the rate of rejections of submissions has risen. This is a worrying trend. My research indicates that the editors do not discriminate against practitioner authors but select submissions entirely on merit. However higher

rejection rates is a worrying scenario for all authors. This is particularly so for practitioner authors where the danger of disillusionment is much higher.

Conclusions on the content of the VR

The major change needs to be in the authorship of the articles. In no way can the editorial staff be criticised as they publish any manuscript received regardless of author provided it is scientifically valid and the content is suitable. They can not publish manuscripts, which are not submitted to them. However some mechanism needs to be implemented to increase the number of articles written by practitioners. I suggest a new post of assistant editor needs to be established funded by DEFRA to help practitioner authors plan in-practice research and to prepare manuscripts for publication.

DEFRA officials are in favour of such a scheme and it is hope that funds will become available in the near future. DEFRA continues to fund the course at Cambridge to encourage practitioners to carry out research (Appendix G)

I would also suggest the following minor changes:

1. To compel multiple authors of manuscripts to state their individual inputs into the research and publication.

2. To publish twice yearly a list of peer reviewers.

3. To record and publish the average time from the arrival of a manuscript to acceptance and on to publication.

4. To publish twice yearly the article rejection rate.

The editor of the VR is in favour of these changes. The editorial staff hope to accommodate them in the near future once the recent electronic on line peer review system has settled in.

Conclusions on the content of the EVJ and EVE

My only criticism of the EVJ as a single species equine peer reviewed journal is that there are too few articles written by practitioners. This criticism is not valid as in 1989, when the editor became aware of this; he launched the EVE. This journal caters for the publishing of manuscripts written by practitioners. Therefore it is not reasonable to expect change in the flag ship scientific journal the EVJ journal. However more practitioners are going to be encouraged to publish in EVE. This is going to be accomplished by allowing practitioners to approach the journal with ideas for articles. The editorial board will consider these ideas. The practitioner then will be given assistance with all stages is of preparation of his manuscript. Advice will be given on a suitable methodology and how the data should not only be gathered but how it should be analysed. Draft proposals will then be agreed. On completion the practitioner author will be given assistance on writing up.

These measures should increase the numbers of practitioners who publish as well as the number of manuscripts published by practitioners.

The EVJ and EVE have moved to online submission. This has increased the number of submissions. However the editors have decided to accommodate more submissions so that the rejection rate will not increase. They will accommodate more submissions by increasing the number of pages in EVJ. This will be funded by a much wider circulation on account of the link with the American Association of Equine Practitioners (AAEP). Another method, which will be used, is to link a significant number of manuscripts on a specific subject into one copy of the journal. This 'special edition' will be sold separately.

As a direct result of this work based project, EVE has decided to increase practitioner input and double the number of editions per year. Now twelve copies will be published every year. Because of the link up with AAEP a US editor has been appointed to work with the UK editor. Also four new assistant editors have been appointed. One of these will take special interest in co-ordinating a new column, that looks at a clinically relevant question, evaluates it from an evidence-

based point of view. Contributions from practitioners will be encouraged. EVE will now have a circulation in excess of 10,000.

EVJ and EVE have much more editorial freedom from their parent association the British Equine Veterinary Association (BEVA) than the JSAP does from the British Small Animal Veterinary Association. This allows them more separate sales of the journal to non-members. As BEVA publishes a separate newsletter, the EVJ and EVE do not have extra pages for this.

Conclusions on the content of the JSAP

There is no doubt that there could and should be more articles in this journal written by practitioners. However the editor is already addressing this omission.

The other changes I suggest are minor:

1. The editorial board should make a statement on to the species content of the journal. Either it should be just for dogs and cats or should contain articles on other so called 'small animals'. Either decision is totally viable. If the journal is just for dogs and cats then the articles on other small animals including rabbits can appear in the VR. If the editorial board of JSAP want articles on other small animals they should have more of them, particularly on rabbits, which are becoming increasingly more popular as pets.

2. There are articles on a wide range of body systems. However I feel that articles on neoplasia are over represented. The editor has already addressed this problem (Dunn 2007). The numbers of case reports are to be limited. Authors are now encouraged to write a 'short report'. The new author's guidelines are shown on the JSAP website at http://www.blackwellpublishing.com/Loi/JSAP.

3. To compel multiple authors of manuscripts to state their individual inputs into the research and publication.

4. To publish yearly a list of peer reviewers.

5. To record and publish the average time from the arrival of a manuscript to acceptance and on to publication.

6. To publish twice yearly the article rejection rate.

The editor is agreement with these changes and implementation will be fast tracked. My research has indicated that EVJ and EVE are in a better position than JSAP, in that they are not so closely linked with their parent association BEVA. Such a change for the JSAP would be very difficult for me to influence. I am not a

small animal practitioner and not a member of BSAVA. However I consider this would be a very positive step forward. Initially I will influence the other four members of the Doctorate group. These four small animal practitioners are very politically active in the small animal sphere. Hopefully they can then broaden the debate into their new Masters groups who are almost totally small animal practitioners. If I can then get a ground swell in the small animal side of the profession I can effect change. This will promote the findings of this project so that more manuscripts in total are published in the JSAP and hopefully thus more manuscripts written by practitioners. The new online submission has increased the submission rate. Hopefully online submission will decrease the time from submission to acceptance. If the journal can have more pages the rejection rate will be reduced provided the authors continue to write 'good science'.

Conclusions on the case studies.

The chances of a successful publication in a well-respected peer reviewed veterinary journal are extremely unlikely, if the final draft has been completed before a more experienced colleague is approached. My research indicates that 80% of successful practitioner authors would be prepared to help an inexperienced author. Great persistence is required before eventual success. A third of successful practitioner authors have their first manuscript rejected. My research indicates that 63% of successful practitioner authors would be prepared to have their names on a list to help naive practitioner authors with their manuscripts for publication in a peer reviewed veterinary journal. My lecture to the scientific research committee of the RCVS influenced the RCVS to agree to such a list, provided there was a written authority from each of the individual authors. This lecture was given on 10th January 2006 to the 13 members of the research committee by invitation of the chairman Professor Quentin MacKellar. The Agenda is show in Appendix V1. The lecture was entitled "Achieving Publishable results from in-practice research". The lecture was not given with a PowerPoint presentation. However the notes to aid the author were prepared in that form and they are shown in Appendix V2.

I explained to the committee the difficulties faced by practitioners in getting publication. I asked if the committee could provide an every increasing list of successful practitioner authors who would be willing to help a practitioner to carry out in-practice research and get the results published.

The Committee agreed to my request for a list to be published on the RCVS website (Appendix V3). They asked if I would compile the list and keep it updated quarterly. This I readily agreed to do (Appendix V4).

I was given the task of contacting all the experienced practitioner authors to obtain their agreement. This I have completed. The full list of over 60 names appears on the website. I was further commissioned to keep this list updated regularly. This I have done and will do in the future.

However the message needs to be got across to unsuccessful practitioner authors that the majority of articles are published somewhere eventually, but there is a need to resubmit articles quickly. Resubmission may include changing the study design. My research has indicated that there is a 100% reluctance by unsuccessful practitioner authors to carry this out.

My figures show that only 6% of successful practitioner authors received any outside financial support for their in-practice research. There is a need for a centralised impartial financial support body for funding in-practice veterinary research in the UK. I requested the scientific research committee of the RCVS to provide this service. They agreed after my representation to carry out this service. Three trust funds, namely the BVA trust, the BEVA trust and the 'Petsavers' trust (This is the trust fund of the BSAVA) have agreed to provide funds for in-practice research.

25 years ago the RCVS recognised the need for specialist status for veterinarians. Initially the 'specialists' were found in the universities. It was hoped that more 'specialists' would become clinicians in private practice. This has occurred to some extent. However my research has found that the increase in 'specialists' in practice has not resulted in more articles being written in peer reviewed veterinary journals by practitioners. However my research indicates that referral veterinary GPs are more likely to be successful practitioner authors. The distinction between 'specialist' and referral GP is rather blurred but is mainly a definition given by the RCVS. Specialist status is awarded by the RCVS. The fellow practitioners who refer patients to a second practitioner for further diagnostic tests or more specialised treatment give a referral GP the status. A referral GP does not have to be a 'specialist'.
It is reasonable for a GP to set up as a referral GP. The referral GP will need to recognise the limitations of the level of competence being offered. The referral GP could be self-assessed in keeping with the teaching of Schon, 'a reflection in practice'. In this manner GPs improve their practice not by receiving further

didactic training but by reflecting on their own practice and altering their approach as a result of this practice. It is hoped that such improvements in their practice can be disseminated to a wider audience by publication.

Referral GPs were six times more likely to have studied the notes for authors before submission than regular GPs. My case study showed that referral GPs were twice as likely to have not only defined a specific area of research but also to have defined a methodology before starting their research. Time, which is such an issue with practitioners, was twice as likely to have been put aside by referral GPs than regular GPs. From a personal perspective, referral GPs, were twice as likely to buy my book (Appendix S). This is encouraging for me as an author.

The RCVS have already assisted me in my drive to increase the number of practitioner authors by organising a seminar for in-practice research (Appendix I). I attended this seminar.

DEFRA are already taking a lead with this issue by funding not only a biannual residential course at Cambridge University Veterinary School (Appendix H) but also by paying for individual pieces of in-practice research by the delegates. I attended the first course. The course organiser Dr Mark Holmes has agreed to promote my book to aid delegates in publication. The editor of the VR has agreed to try to fast track any submissions from this group. A sub editor has been delegated to help with their preparation.

My research indicates that 94% of final year veterinary students would like to carry out research in practice. It is vital that they are given the chance. SPVS has been made aware of this and have agreed to establish pathways for new graduates to carry out research. The RCVS through their Professional Development Phase (PDP), which will become mandatory for 2007 graduates, will encourage in-practice research.

My research indicates that 100% of final year veterinary students would like to proceed to further qualifications. The establishment of a 'life long learning ladder' for veterinary surgeons has been given priority by the RCVS. They have started

the establishment of the new modular certificates as prepared by the SPVS doctorate group of which I am a member.

There was a need to modernise these certificates as for every five practitioners who enrolled for the previous type of certificate, only one attained a successful qualification (Viner 2007). This low pass rate could be interpreted in several ways. It could be argued that a low pass rate is acceptable, and reflects the high standard of the examination. Yet, even if this were the case, many candidates are likely to have become demotivated in their professional development as a result. It could be said that the candidates had a poor standard. However this is unlikely considering these are highly motivated professionals, who have completed one of the most challenging degree courses in the country. Perhaps the expected standards were set at too high a level for practitioners or the content was not made sufficiently clear to the candidates. Maybe the candidates did not receive a sufficient level of support to give them a reasonable chance of success. On the recommendation of the doctorate group the RCVS considered the certificates should be restructured to become modular. This will make them more accessible and achievable by practitioners

So far the doctorate group through NCWBLP and Middlesex University is the only agreed learning's provider approved by the RCVS. This is gratifying, as the whole concept of these modular certificates has been organised by the doctorate group. The flagship modules have been brought together so that a practitioner can achieve a certificate in advanced general practice. There will be an 'A' Module on professional key skills. This module involves 150 study hours and is required for all candidates. It will include communication skills, personal development, welfare, ethics, personnel management, data handling and legislation. I see the skill required for collection and critical analysis of data directly liked with the ability to carry out in-practice research. Candidates will also have to attain a compulsory 'B' Module in general clinical skills in all species. However they will also have to obtain a specific 'B' module in Small Animal Practice, Farm Animal Practice or Equine Practice. Three 'C' Modules in Clinical

Audit, Advanced communication kills and Practice management will complete the certificate.
I also have a personal involvement in a proposed certificate in Equine Dentistry. The candidate will have to complete the 'A' Module, the 'B' Module in Equine Practice as in the certificate in general practice. This will be followed by one 'C' module in Equine Surgery, a 'C' module in Equine Dentistry and a 'C' module in Imaging of the Equine head to form a new certificate of Equine Dentistry. The three modules are shown in Appendix T. The methods of assessment are in keeping with the approach used by the NCWBLP in conjunction with Middlesex University.

This investigation in to the difficulties faced by practitioner researchers in publication has revealed that the main difficulty lies with the researcher not the publisher. My figures reveal that 78% of successful authors had extra qualifications in contrast to only 25% of the unsuccessful authors. I admit that this is a higher figure than the 13% of extra qualifications held by the veterinary population as a whole. However it does confirm that to accomplish publication a researcher must have some extra learning. Although when questioned all the successful and the unsuccessful practitioner authors felt that a further qualification should not be a prerequisite.
When comparing the results from the two case studies of successful and unsuccessful authors certain parameters standout as highly relevant to success. 80% of the successful authors read the notes for contributors for the journal before submitting their manuscript. Only 12.5% of the unsuccessful authors carried out this simple task. I conclude that this task is vital for success. I have persuaded the editors who now carry out all submissions on line to stress to perspective authors to read and follow the 'instructions for authors' carefully before submission. I have included all the instructions for authors in my book and in the appendix of the project (Appendices Q1-4).
Very nearly half of the successful authors realised the importance of references to the impact factor of a journal. On the other hand none of the unsuccessful

authors had this understanding. I conclude that education of practitioner authors on the use of references is extremely important. I have stressed this point in my book. I have also stressed the need for a literature search before starting to do any research and certainly before starting to write up a paper. 84% of successful authors had carried out this task, which with modern retrieval systems is relatively straightforward. Only a quarter of unsuccessful authors carried out a literature search. I conclude that it is very important for a successful publication. None of the unsuccessful authors had considered their methodology before they started their research. In fact only 44% of the successful authors had considered their methodology. It should be remembered that a third of successful authors had their first manuscript refused publication. I conclude that a well thought out methodology is vital for publication of an article in a peer-reviewed journal.
I asked both the successful and the unsuccessful authors to name up to three papers written by practitioners, which they considered to be useful models for less experienced authors. 40% of successful authors volunteered such papers. I conclude that successful authors need to spend time reading other papers in peer-reviewed journals. None of the unsuccessful authors volunteered any papers. I therefore conclude that success in publication is unlikely without a firm base of reading relevant peer-reviewed journals.

One part of my research was to ask the specific question "Does the veterinary profession in the UK need a new peer reviewed journal?" To do answer this question I have evaluated the existing peer reviewed journals.

No new journal is required at the present time. However if in the future a piece of published work is mandatory within the framework of the new RCVS modular certificates, then journal space will have to be made available.

I interviewed 48 new Graduates as part of my case studies. I obtained results, discussed them and then formed some conclusions as stated earlier. However as an undertone from my interviews I perceived there was a need for some degree

of mentoring for new graduates in their first year in practice. I approached Norbrook Laboratories for funding for this project. I informed them that it was the first of its kind. It would be local to my region. It would be run through the Eastern Counties Veterinary Society of which I was president.

A series of letters appeared in the VR on 'The incidence of suicide in the veterinary profession in England and Wales' (Halliwell & Hoskin 2005) (Mellanby 2005) and (Birkbeck 2005). My letter (Appendix W1) in the VR prompted several happenings. Several New Graduates contacted me in the Eastern Region. I was asked to write a short article on mentoring for 'Off The Record' in January 2006 (Appendix W2). I organised the mentoring meeting for newly qualified veterinary graduates in December 2005. The conclusions of this meeting (Appendix W3) were raised when I was invited to attend a Mentoring Working Party meeting at BVA HQ on 18th January 2006. I made some reflections (Appendix W4), which link with the minutes (Appendix W5) of the Mentor Working Party meeting. The BVA produced a Working Document (Appendix W6). I reflected on this Document (Appendix W7).

The upshot of these initiatives is that an official New Graduate-mentoring group in the Eastern Region has been formed. Also there has been a nation-wide drive by the BVA, through the territorial divisions, for new graduate mentoring. Funds have been raised by the BVA from practices on a voluntary basis. BVA has organised training of facilitators. I have contributed to this process. BVA has provided funds to all the territorial divisions to hold regional new graduate mentoring meeting. We held a very successful meeting in the eastern region on 26th April 2007.

If I reflect on this initiative I can see the value of this 'Work-based Project'. My research has revealed a need. New graduates in practice feel isolated. This has been triangulated by other research. Veterinary Surgeons, mainly young, are three times more likely to commit suicide than any other professional group in the UK (Halliwell & Hoskin 2005). I have answered that need by organising a mentoring locally. I have publicised this nationally through my contacts in the veterinary press. These contacts were established directly by this research. More

politically active members of the profession have taken up the challenge. A nation-wide scheme has been established. I have assisted in this scheme nationally. I have then been recruited regionally to help. The circle of reflection in action has been completed.

Conclusions on the value of publication.

I published a paper 'A Case Study of 125 horses presented to a general practitioner in the UK for cheek tooth removal' in EVE in 2005 (Appendix X1). As a result of this I was asked to attend to present a paper and take part in a question answer panel at the Association of American Equine Practitioners (AAEP) equine dentistry congress for three days from 29th July 2006 in Indianapolis. I prepared a smaller version to appear in the proceedings with a more controversial tittle (Appendix X2). I submitted this to Professor Paddy Dixon, who was the UK co-ordinator of the congress. He returned them to me with some suggested alterations shown in red (Appendix X3). I then approved these changes and submitted them to the AAEP Congress organiser. I attended the congress and not only read the paper to an audience in excess of 400 but also chaired a question answer panel session open to all delegates.

I can reflect on this. My first learning in relation to this small incident in my life was the value of recording the initial data on the removal of cheek teeth from 125 horses. I could then reflect on the actual facts of the procedure to improve my own method of extraction. This would be following the teaching of Schon 'Reflection in action'. I then carried out a literary review on the procedure and learnt from others. I then read the 'Guidelines for authors' published by the editor of EVE. I followed these carefully and prepared the paper. This was accepted after minor changes suggested by the reviewers. I can reflect on the added benefit to my paper from these suggestions. I can also reflect on how an experienced academic can improve on a presentation. The proceedings, published after the congress, will not be peer reviewed. However horses world-wide will benefit from better cheek tooth removal. The proceedings are likely to be referenced in future publications. It was important that they were in clear correct English and in the correct format. I learnt from the preparation of the original paper and the preparation of synopsis for the proceedings. What I have learnt I have included in my advice for prospective veterinary authors in my book.

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Acknowledgements

Professor Jonathan Garnett National Centre for Work Based Learning Partnerships at Middlesex University

Dr Pauline Armsby National Centre for Work Based Learning Partnerships at Middlesex University

Dr Carol Costley National Centre for Work Based Learning Partnerships at Middlesex University

Professor David Lane at Professional Development Foundation

Dr Annette Fillery-Travis at Professional Development Foundation

Dr Bradley Viner

Chris Whipp

Dr Paul Manning

Dr Susan Shuttleworth

Appendices

A. Amount of involvement of authors in the EVJ.

B. Letter to the editor of the VR.

C. Letter to the Veterinary Times.

D. Letter to unsuccessful practitioner authors.

E. Editorial in the JSAP by Bradley Viner.

F. Article in SPVS Bulletin.

G. Course Program for in-practice research at Cambridge.

H. Course Program for research at RCVS.

I. Letter to successful practitioner authors.

J 1. Trial interview form for successful practitioner authors.

J 2. Interview form for successful practitioner authors.

K. Interview form for unsuccessful practitioner authors.

L. Interview form for editors of peer reviewed journals.

M. Interview form for newly qualified veterinary surgeons.

N. Interview form for final year veterinary students.

O. A retrospective study of clinical problems seen in pet pigs.

P. A rejection letter from VR.

Q 1 Instructions for contributors VR.

Q 2 Instructions for contributors EVJ.

Q 3 Instructions for contributors EVE.

Q 4 Instructions for contributors JSAP.

R 1. Total number of articles in the VR 1995-2004.

R 2. Total number of papers in the VR 1995-2004.

R 3. Total number of short communications in the VR 1995-2004.

R 4. Total number of 'other' papers in the VR 1995-2004.

R 5. Total number of 'other' short communications in the VR 1995-2004.

R 6. Total number of 'wild' category short communications in the VR 1995-2004.

R 7. A comparison of the numbers of equine articles in the VR, EVJ and EVE 1995-2004 showing yearly numbers.

R 8. A comparison of the total number of canine articles in the VR and JSAP 1995-2004 showing yearly numbers.

R 9. A comparison of the total number of feline articles in the VR and JSAP 1995-2004 showing yearly numbers.

R 10 A breakdown of all the articles in EVE.

R 11 A breakdown of all the articles in EVJ.

S 'Publish and be praised' by Graham Duncanson.

T 1 'C' Module Equine Dentistry.

T 2 'C' Module Imaging Techniques in relation to Equine Dentistry.

T 3 'C' Module Equine Surgery.

U Paper for VR 'An independent analysis of the VR'.

V 1 Agenda for Research Committee meeting.

V 2 Notes of Lecture to RCVS Committee.

V 3 Letter from Chairman of RCVS Research Committee.

V 4 Reply to Research Committee.

W 1 Mentoring of new graduates.

W 2 Mentoring of new graduates continued.

W 3 Reflections on a meeting of new graduates in the Eastern Region held on 20/12/05 at Scole.

W 4 Reflections on the Mentoring working party meeting on 18/1/06.

W 5 Minutes of the working party meeting.

W 6 Draft Document.

W 7 Graham Duncanson's reflections on Draft document.

X 1 Paper appearing in EVE.

X 2 Proceedings for AAEP congress.

X 3 Proceedings showing alterations.

Y Vet Times article on Colic in the horse.

Appendix A

Amount of involvement of authors in EVJ

EQUINE VETERINARY JOURNAL

File No: «EVJ_ID» **Date received:**«Received»
Pre-publ confirm:
Category:«Category»
Country of origin: «Correspondence_country»

Author(s): «Authors»

Title: «Manuscript»

Acknowledged to: «Correspondence_title» «Correspondence_christian» «Correspondence_surname» **Date:** «Date»
Please state the percentage of each authors' contribution below and please note that it is your responsibility to ensure that co-authors have seen and approved the final version of the manuscript, **we now require a signature from all co-authors**. Please complete this form with details of the contribution of all authors involved in the submission of this manuscript. This will not be published but will be held on file in the Journal office.

NAME	INITIATION, CONCEPTION & PLANNING	PATHOLOGY	EXECUTION	WRITING	STATISTICS

Signature ..... Date

Appendix B

Letter to the editor of the VR

Westover Veterinary Centre,
40 Yarmouth Rd, North Walsham,
Norfolk.
NR28 9AT

22/3/05

Dear Editor

I have just completed a Masters degree, researching into the difficulties faced by practitioner authors wanting to have papers published in peer reviewed journals. Your paper helped our Masters group by publishing a questionnaire. I found that only 6% of papers written in the four most commonly read peer reviewed journals, were written by practitioners. I am now expanding my research to do a doctorate.

I would be grateful if I could use your paper to request practitioners who have had their papers refused publication to contact me at vetdunc@ukonline.co.uk . Hopefully I will be able to assist them with their publication. Also I hope that the information they supply will help others.

Yours faithfully

Graham Duncanson BVSc, MSc (VetGP) MRCVS

Appendix C

Letter to the Veterinary Times

Westover Veterinary Centre,

40 Yarmouth Rd, North Walsham,

Norfolk.

NR28 9AT

22/3/05

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I would be grateful if I could use your paper to request practitioners who have had their papers refused publication to contact me at vetdunc@ukonline.co.uk Hopefully I will be able to assist them with their publication. Also I hope that the information they supply will help others.

Yours faithfully

Graham Duncanson BVSc, MSc (VetGP) MRCVS

Appendix D

Letter to unsuccessful practitioner authors

Westover Veterinary Centre,

40 Yarmouth Rd, North Walsham,

Norfolk.

NR28 9AT

1/5/05

Dear

I have just completed a Masters, researching into the difficulties faced by authors wanting to have papers published. I am now expanding my research to do a doctorate.

Sadly your paper has not been accepted for publication in EVJ. I would be very grateful if you could contact me at vetdunc@ukonline.co.uk hopefully I will be able to help you to get your work published. Your observations, which will be treated confidentially, will help with my research and hopefully aid other practitioners with similar difficulties.

Many thanks for your help

Kind Regards

Graham Duncanson

Appendix E

Editorial in the JSAP by Bradley Viner

JOURNAL OF SMALL ANIMAL PRACTICE • VOL 46 • SEPTEMBER 2005 1

EDITORIAL

Veterinary research and veterinary practice –
bringing two worlds together

VETS in practice want to read more articles written by practitioners, and this provides the theme for this month's issue. The Editor would have liked to have filled the whole issue with articles written by general practitioners, but there weren't enough of them. Of the articles in this issue, one is written by a vet solely in general practice, and two by vets working in a specialist feline practice: Chris Little reports two cases of hypoglycaemia accompanied by sinus bradycardia, one in a dog and one in a cat (pp xxx-xxx); David Godfrey and others present the case of a cat with vitamin D-dependent rickets type II (pp xxx-xxx); and David Godfrey further describes a retrospective study into natural feline arthritis (pp xxx-xxx). An article by Anita Patel and others (pp xxx-xxx) focuses on dermatophytosis in first-opinion cases, and M. Tivers and others (pp xxx-xxx) present a comparison between neutering techniques taught in the veterinary schools and those actually used in practice. All in all, an excellent shift in focus, at least for one month, towards practitioner-driven issues. But does it go far enough?

In his dissertation as part of the Society of Practising Veterinary Surgeons (SPVS) MSc group, Graham Duncanson (2003) looked at the value of in-practice research to the veterinary profession, and concluded that 96 per cent of veterinarians 'valued very highly' articles written by practitioners. He found that only 6 per cent of articles in peer-reviewed veterinary journals were written by practitioners,

and that only 7 per cent of practitioners had attempted to have articles published in those journals. Graham Duncanson would be very interested to hear from any practising veterinarians who have experienced difficulties with publication (vetdunc@ ukonline.co.uk).

The demand is there, this edition of the *Journal of Small Animal Practice* suggests that the BSAVA is responsive to it and there is a great deal that practitioner-based research could contribute. The nature of practice-based research may be unlike that carried out in an academic institution: it will often be more qualitative. However, it is able to investigate phenomena often unique to first-opinion practice, so is different rather than inferior to the large-scale quantitative reports that are typically produced in an academic environment. Both forms of research have their biases and their limitations, and it is important to recognise these and take them into account when acting upon conclusions.

Enough talk. What about action?

What can be done to improve the links between academia and general practice? I would suggest there are three areas of activity that should be considered:

_ Encouraging work-based research. Five of the eight practitioners that completed the SPVS MSc are now carrying out practice-based research for SPVS professional doctorates, and three new MSc groups have been established, with more in the pipeline. It is hoped that the new modular postgraduate Certificate in Advanced Veterinary Practice being formulated by the RCVS will provide a platform for practising vets to study some research methodologies, carry out a work-based research project and thus complete an MSc.

Practitioners with the will to further the sum total of

knowledge need a support structure to assist them, and journals need to be prepared to offer assistance and an open-minded approach to the peer-review process. A significant new development is the clinical research outreach programme for vets in practice that has been implemented by the University of Cambridge. This consists of a short residential course, together with support to enable practitioners to perform a clinical research project and get the results published. Readers can contact Dr Mark Holmes (mah1@cam.ac.uk) if they are interested in participating.

_ Improved communication and collaboration with the universities. Academic institutions are coming to realise that there is a great deal of valuable data and knowledge in general practice that could be channelled into some excellent applied research, and progress in information technology is making the flow of information more practicable. As society's emphasis shifts increasingly towards involving universities to a greater extent in work-based life-long learning, so the veterinary schools could play an increasing role in the provision of a holistic programme of professional postgraduate development, rather than just the provision of individual CPD courses.

_ More relevant academic research. The RCVS Practice Standards Scheme is driving interest in clinical audit as a measurement of practice performance, which in turn is creating a demand for the evidence base on which the process depends. Research into this area (Viner 2003) has highlighted that the veterinary evidence base for much clinical work is currently sorely lacking, particularly when compared with what is available to our medical colleagues. Some disparity is inevitable, but it is hoped that academics will find it in their interest to respond

to demands from practitioners for a high standard of research to support their work. There are many changes underway in the field of veterinary education and it is hoped that these will enhance the role of the practising vet in guiding and actively participating in veterinary research.

It is time to put "Practice' back into the *Journal of Small Animal Practice!*

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Bradley Viner

bviner@northwoodvets.plus.com editorial September 8/9/05 12:47 PM Page 2

Appendix F

Article in SPVS Bulletin

In Practice research, Graham Duncanson.

Progressive practices fund CPD courses for partners and assistants. There is a wide choice of courses available. However these are costly in terms of time and money particularly if the venue is far away. There is no doubt that less expensive private study in the form of reading peer reviewed journals is also an important part of CPD. The vast majority of the articles in these journals are written by non-practitioners and yet 96% of veterinarians interviewed highly valued articles written by practitioners.

Therefore the needs of busy practitioners are not being met. SPVS, BVA and RCVS actively encourage evidence-based medicine and clinical audit. There is going to be an ever-increasing volume of useful data collected by practitioners. There is a grave danger that much of this information will be lost. Innovative projects on the Internet are likely to help with data saving but publishing of information in peer reviewed journals is still going to remain the gold standard. The main research question for my DProf is to discover why practitioners publish so little material. I hope to be able to suggest ways to remedy this situation.
Lack of training by practitioners on performing in-practice research is one reason for the current situation. This is being addressed by SPVS. Bradley Viner has been organising well-attended roadshows on their behalf. It is also being addressed by DEFRA who are funding a course on in-practice research at Cambridge run by Mark Holmes. The veterinary schools are playing their part by teaching undergraduates how to prepare and assess papers. Useful information gathered by final year students doing research projects is sadly being lost at the present time.
Many busy practitioners are currently investing considerable time and money into clinical audit and in-practice research. Their efforts should be applauded and recognised by the profession. Unfortunately publication by practitioners in peer reviewed journals is very rare. It is not encouraged by peer reviewers and yet

editors state that practitioners are considerably more likely to accept criticism of their work and rewrite it than academics.

EXAMPLES OF GP RESEARCH include how a practitioner can advance veterinary medicine by the development of surgical techniques and providing tuition for future generations. The use of *molar spreaders* is described in the article 'A case study of 125 horses presented to a GP in the UK for cheek tooth removal.' (Duncanson, G.D. (2004) Equine Vet Education 16,(3), 166-168.)

Another example is the building of a database/picture of the types of clinical problem that exist in the field in practice. 'A case study of 100 horses presented to an equine dental technician in the UK' (Brigham and Duncanson (2000) EVE 12(2), 63-67) is an example of this, which also makes useful comment on the working relationships between vets and paraprofessionals.

If any of the readers, who have the full sympathy and support by the editor of this bulletin, have been frustrated in their efforts to get their work published, they can contact me at vetdunc@ukonline.co.uk and hopefully I will be able to help them.

Equally I would like to refer them to two excellent papers by Neil Forbes in "In Practice" in November 2001 and January 2002.

Doing research in practice helps to keep veterinary minds active, alert, motivated and interested in their work.'

Appendix G

Course Program for in-practice research at Cambridge

CIDC Practice-based research course
(19-23 September 2005)

The Clinical Research Outreach Programme (CROP) is part of the CIDC supported by Defra and the HEFC, and aims to deliver a core training program to promote clinical research expertise among veterinary practitioners.

The CROP practice-based research course consists of:

- A five day residential course held in Cambridge
- Research Project & Mentoring

OVERVIEW

The primary measure of success of the programme is for each participant to take a small clinical research project through the entire cycle from initial idea through to publication in a peer-reviewed journal. This should be achieved over the period of about a year using the following schedule:

Prior to the Course

Complete preparatory course material (a textbook will be provided) and consider project topic.

September

Attend the residential course (19th-23rd) and complete the following tasks:

a) Make final decision on the question to be answered

b) Prepare a formal proposal for the research project (this will be structured along the lines of a grant application form), to be completed by the end of the course and signed by your project supervisor.

This will require the following:

1. A literature review
2. Methodology (including plans for subject numbers, data analysis, stats etc.)
3. Ethical & legislative considerations
4. Costings

5. Project management (including milestones, interim reports etc.)

c) Presentation of the proposed project

d) Establish a working relationship with the supervisor of the project

e) Receive appropriate training

Receive notification of funding for projects by end September.

October - June 2006

Undertake the data collection phase of the project.

June - September 2006

Analyse data and write up the results for publication.

A large proportion of the residential course is based on a human medicine textbook ('Designing Clinical Research' by S. Hulley et al, Lippincott, Williams & Wilkins). Relevant chapters are outlined below as required reading. Lecturers have been asked to use the appropriate chapters as a guide for lecture content. Lectures should be illustrated with veterinary examples and focus on practical support for the participants' own clinical research. Small assignments will be given to the participants to complete on Monday, Tuesday and Wednesday nights; these will be discussed in supervisions (small group teaching) at 08:40 on Tuesday, Wednesday and Thursday mornings.

Where possible, and appropriate, lecturers have been asked to identify a small practical exercise for students to perform as an assignment to be completed in the evening following the lecture.

However, the main assignment for the participants will be the preparation of a formal research proposal. This will be submitted in written form for formal assessment, and in the form of a short talk. These talks will be given on the final day of the course. Lectures will be 40 minutes long.

RESIDENTIAL COURSE - PROVISIONAL PROGRAMME

Monday, 19th September

11:00 Course commences with coffee in the SCR

11:30 Welcome - Introduction/Housekeeping

PWF passwords & introduction to computing facilities

Accommodation

12:00 Lecture 1: Introducing scientific method and process - Dr Mark Holmes

Objectives

- Understand what is meant by scientific method
- Know the components and mechanism of a clinical research project
- Be able to form a focussed research question

Reading

Chapter 1: The Anatomy and Physiology of Clinical Research

- The anatomy of research: What it's made of
- The physiology of research: How it works
- Designing the study

Chapter 2: Conceiving the Research Questions

- Origins of a research question
- Characteristics of a good research question
- Developing the research question and study plan

13:00 Lunch

14:00 Lecture 2: Finding and appraising scientific papers - Dr Mark Holmes/Dr Peter Cockcroft

Objectives

- Be able to perform a methodical appraisal of a research paper
- Be able to perform a literature search using Pubmed

Assignment

Exercise on paper appraisal (Set by Dr Peter Cockcroft)

14:40 Lecture 3: Sampling - Dr Mark Holmes

Objectives

Understand appropriate strategies for subject selection

Reading

Chapter 3: Choosing the Subjects: Specification, Sampling & Recruitment

Target population, Sample population, Inclusion & exclusion criteria, Sampling, Recruitment

15:30 Practical 1: Internet resources, searching Pubmed, using electronic papers

Tuesday, 20th September

08:40 Supervision on Monday's Assignment

Lecture 4: Variables - MFH

Objectives:

Understand the type of measurement that may be required

Be able to optimise precision, accuracy and validity of measures

Reading:

Chapter 4: Planning the Measurements: Precision and Accuracy

Continuous variables, Categorical variables (nominal & ordinal), Precision, Accuracy, Validity

Lecture 5: Establishing the hypothesis - MFH

Objectives:

Be able to translate a research questions into null hypotheses

Understand underlying statistical principles

Reading:

Chapter 5: Getting Ready to Estimate Sample Size: Hypotheses & Underlying Principles

Characteristics of a good hypothesis

Types of hypothesis (relation with null hypothesis)

Underlying statistical principles

Type I & Type II errors

Magnitude of effect

Alpha & Beta probabilities, and power

P value

Multiple and post-hoc hypotheses

Lecture 6: How many animals/patients are needed? - MFH

Objectives:

Appreciate the importance of statistical advice at the planning stage

Be able to estimate sample size and power

Understand some basic statistical tests

Reading:

Chapter 6: Estimating Sample Size & Power

Sample size techniques for analytic studies and experiments

Student's t test, Chi-squared test, Correlation coefficient, Dropouts, Categorical variables, Survival analysis, Clustered samples, Matching Multivariate adjustment, Equivalence studies, Sample size techniques for descriptive studies, Continuous variables, Dichotomous variables, Fixed sample size considerations, Estimating sample size in the face of insufficient information

Practical 2: Using Excel

Assignment: Estimating sample size exercises

Lecture 7: Cohort studies - RN

Objectives:

Understand the strengths and weaknesses of cohort studies

Understand variations of cohort study designs

Be able recognise when a cohort study would be appropriate

Reading:

Chapter 7: Designing an Observational Study: Cohort Studies

Prospective cohort studies

Retrospective cohort studies

Nested case-control studies & case-cohort studies

Multiple-cohort studies & external controls

Planning a cohort study

Lecture 8: Cross-sectional and case-control studies - RN

Objectives:

Understand the strengths and weaknesses of case control studies

Understand the strengths and weaknesses of cross-sectional studies

Be able recognise when these studies would be appropriate

Reading:

Chapter 8: Designing an Observational Study: Cross-Sectional and Case-Control Studies

Cross-sectional studies

Case-control studies

Chapter 9: Enhancing Causal Inference in Observational Studies

Spurious associations due to chance and bias

True associations other than cause-effect

Anticipating confounders at the design stage

Dealing with confounders at the analysis stage

Assignment: Study design exercise

Lecture 9: The randomised blinded controlled trial - VA

Objectives:

Understand the strengths and weaknesses of the RBCT

Be able to plan and implement a RBCT

Be able to recognise when a RBCT would be appropriate

Reading:

Chapter 10: Designing an Experiment: Clinical Trials I

Chapter 11: Designing an Experiment: Clinical Trials II

Randomised blinded controlled trial

Selecting participants

Measurement of baseline variables

Randomisation

Choice of intervention & control

Follow-up and adherence to the protocol

Measuring the outcome

Clinical vs surrogate outcomes

Statistical characteristics

Number of outcome variables

Adjudication of outcomes

Adverse effects

Analysing the results

Intention to treat analysis

Monitoring clinical trials

Alternatives to the randomised blinded controlled trial

Good clinical practice guidelines (VMD requirements)

Lecture 10: Studies on diagnostic tests - VA

Objectives:

Understand the utility of diagnostic tests (sensitivity, specificity)

Understand clinically relevant questions that can be asked of a test

Be able to plan and implement a study on a diagnostic test

Reading:

Chapter 12: Designing Diagnostic Test Studies

Determining if a test is useful

Studies of test reproducibility

Studies of the accuracy of tests

Effect of test results on clinical decisions

Studies of feasibility, costs, and risks of tests

Studies of the effect of testing on outcome

Pitfalls in the design or analysis of diagnostic test studies

Lecture 11: Designing questionnaires - CRW

Objectives:

Understand the principles of creating good questionnaires

Be able to design and use questionnaires and interviews

Reading:

Chapter 15: Designing Questionnaires & Data Collection Instruments

Designing good questions

Open-ended vs closed questions

Formatting

Wording

Setting the time frame

Common pitfalls

Measuring abstract variables

Steps in assembling the instruments for the study

Listing the variables

Collecting existing measures

Composing a draft

Revising the draft

Pre-testing

Validation

Administering the instruments

Questionnaires vs interviews

Lecture 12: Study implementation – MAH

Objectives:

Appreciate the need to consider the need for quality control

Be able to implement appropriate quality control strateges

Reading:

Chapter 17: Implementing the Study Pre-testing, Quality Control & Protocol Revisions

Pre-testing

Quality control

Quality control and clinical procedures

Quality control of laboratory procedures

Quality control of data

Protocol revisions once the data collection has begun

Lecture 13: Data management - VA

Objectives:

Understand basic requirements for effective storage & use of data

Be able to implement manage simple data using Excel

Reading:

Chapter 16: Data management

Defining the variables, Names, Format and range of permissible values, Creating the study database & data dictionary, Simple databases, Complex databases, Statistical analysis software, Data dictionary, Entering the data and correcting errors, Creating dataset for analysis, Backing up and archiving

Lecture 14: Writing a research protocol and applying for funding - JW

Objectives:

Be aware of sources for clinical research funding

Understand the structure(s) of a grant proposal

Understand the grant review process

Understand the grant awarding/monitoring process

Be able to write grant proposals

Chapter 19: Writing and funding a Research Protocol

Practical 3: Basic statistics using Excel

Lecture 15: Writing and reviewing scientific papers - PDC

Objectives:

Understand the linguistic conventions of scientific writing

Know the structure of a conventional research papers

Understand the refereeing process

Be able to write and review research papers

Lecture 16: Ethical and legal consideration - HOI

This Lecture introduces the fundamental ethical principles of autonomy, beneficence, nonmaleficence, and justice and applies these principles to clinical research. The use of unproven therapies, the use of placebos, the consent process, institutional review board submission and review processes, conflict of interests, and the costs of clinical research will be covered. The legislation pertinent to animal research and pharmaceutical registration will also be covered.

Objectives:

Know the appropriate legislation, particularly the Animal Procedures Act

Be able to recognise if a study is likely to require a license

Be aware of the GCP guidelines that may be relevant to a study

Understand some of the ethical issues that may impinge on a study

Understand the requirements for informed consent by clients

Lecture 17: Evidence-based veterinary medicine - PDC

Objectives:

Know what is meant by EBVM

Understand the importance of clinical research to the practice of EBVM

Lecture 17: Introduction to Mathematical Modelling - CRW

Objectives:

This lecture aims to provide a basic overview of mathematical modelling.

The use of mathematical models in veterinary science - Different types of model: empirical vs mechanistic; deterministic vs stochastic - Steps in constructing a model - Overview of sensitivity analysis: sensitivity to inclusion of model parameters, sensitivity to parameter estimates - Infectious disease modelling: the SIR model - Basic reproductive ratio R0

Example: modelling the within-flock dynamics of scrapie. or

Modelling the spatial spread of infectious diseases: comparison of modelling approaches -

Current research: network analysis

Lecturers:

VA – Vicki Adams (AHT Epidemiologist)

PDC – Peter Cockcroft (Cambridge Lecturer)

MFH – Fred Heath (Cambridge Lecturer)

MAH – Mark Holmes (CIDC Outreach Program Director)

RN – Richard Newton (AHT Epidemiologist)

JW – James Wood (CIDC Director)

Appendix H

Course Program for seminar on in-practice research at RCVS

Morning Programme

Morning session chaired by Professor Sheila Crispin, RCVS Junior Vice-President

10.00am Coffee and Registration

10.30am Welcome, and brief introduction to clinical audit
Mrs Lynne Hill, RCVS President

10.40am Spearheaded collaboration in clinical medical research
Dr Liam O'Toole, UK Clinical Research Collaboration

11.10am How to create an environment in which clinical activities can be research activities as well
Professor Jonathan Elliott, Research Vice Principal at Royal Veterinary College

11.40am Cambridge VTRI experience of involving practitioners in research
Dr James Wood – Director, Cambridge Infectious Disease Consortium

12.10pm General Discussion
Chaired by Professor Sheila Crispin
12.30pm Lunch

Afternoon Programme

Afternoon session chaired by Professor Julie Fitzpatrick, Director, Moredun Research Institute

13.15pm Practice based population studies
Dr Hugh Lewis, DataSavant/Banfield, The Pet Hospital

13.45pm Role of practitioners in surveillance and how it feeds back into herd health planning and disease control; a rural perspective
Mr George Gunn, SAC Animal Health Group

14.15pm Experience as a practitioner of performing research in a practice environment
Mr David Black, Practitioner in Cumbria

14.45pm General Discussion
Chaired by Dr Judy MacArthur Clark

15.00pm Discussion Panel
Mrs Carole Clarke, Mill House Veterinary Surgery
Dr Graham David, Veterinary Laboratories Agency
Dr Chris Little, Barton Veterinary Hospital

16.00pm Summing Up
Professor Quintin McKellar

16.15pm Finish. Tea and Biscuits

The key aim of this one-day seminar is to demonstrate how research has a place in every day practice, to stimulate participation in research and to encourage evidence based veterinary medicine and clinical audit.

Appendix I

Letter to successful practitioner authors

Westover Veterinary Centre,
40 Yarmouth Rd,
North Walsham,
Norfolk.
NR28 9AT

A. N. Other, Esq, MA, VetMB, DSAS (Orth), MRCVS,
Well Known Veterinary Services,
Business Park,
London. WI

13/1/05

Dear Mr Other
Last year I completed a Masters, researching into the difficulties faced by authors wanting to have papers published in peer reviewed journals. I found that only, 6% of the papers written in peer reviewed journals, were written by practitioner authors. I am still in full time large animal practice but expanding my research, hoping to complete a doctorate.
I was interested to read your paper in the Veterinary Record in 2002 on "Heart Disease in the dog". There have been only 18 papers written by practitioners in the Veterinary Record in the last ten years. Yours was one of these. I would also be very grateful if you could complete the enclosed questionnaire to help me with my research. I am on vetdunc@ukonline.co.uk if you have any queries. I can easily send the questionnaire by email if that would be easier.

Yours sincerely

Graham Duncanson

Appendix J 1 Trial interview form for successful practitioner authors in peer- reviewed journals

Name and Qualifications
Contact address
Contact telephone and fax numbers
E-mail address
Age group 20-25 26-30 31-40 41-50 51 or over
Main area of work when you wrote your successful paper
GP, Referral GP, Teaching/Research, Industry, DEFRA, Other Please state
For how many years have you been publishing papers? 1-5 6-10 11-20 21or over
Did you have help from outside of practice with your first paper? YES / NO
Was it successful ? YES / NO
Did you use the notes supplied for contributors before writing your paper?YES / NO
Were you aware that the sources of your references influenced the scientific standing of the journal? YES / NO
Did you carry out a literature search to help to guard against the increasing problem of duplication? YES / NO
Would a textbook have helped you to write your first paper YES / NO
Has your practice got a well-stocked up-to-date library? YES/ NO
If an aspiring practitioner author approached you would you be happy to read and critique his paper? YES / NO
Would you be prepared for your name to be put on a list to be given to aspiring practitioner authors? YES / NO
I would value your views on In-practice research
Should practitioners perform it? YES / NO
Should it performed only by practitioners with extra qualifications? YES / NO
Should the results be published in peer reviewed journals? YES / NO
Should a piece of In-practice research be included as a compulsory module in the new possible RCVS certificate? YES / NO
Should assessment be a publication in a named peer reviewed journal? YES / NO
Please give the references of three papers, written by practitioners, which you think are good.
1).....
2).....
3).....
Before you started doing in-practice research, did you define a specific area of research and set one specific question? YES / NO
Before you started doing in-practice research, did define a project methodology? YES/NO
Before you started doing in-practice research, did you have a specific journal in mind for publication? YES / NO
Before you started doing in-practice research, did you fund the time required accurately? YES / NO

Why did you undertake in-practice research?

.....

Can you give one possible means to encourage practitioners to carry out in-practice .....

.....

Can you give one possible means to encourage practitioners to publish their results in peer reviewed journals.....

.....

.....

.....

Appendix J 2 Interview form for successful practitioner authors in peer- reviewed journals

Name and Qualifications

Contact address

Contact telephone and fax numbers

E-mail address

Age group 20-25 26-30 31-40 41-50 51 or over

Main area of work when you wrote your successful paper

GP, Referral GP, Teaching/Research, Industry, DEFRA, Other Please state

For how many years have you been publishing papers? 1-5 6-10 11-20 21or over

Did you have a paper rejected for publication before your first published paper? YES / NO

Did you have help from outside of practice with your rejected paper? YES / NO

Did you have help from outside of practice with your successful paper? YES / NO

Did you use the notes supplied for contributors before writing your paper?YES / NO

Were you aware that the sources of your references influenced the scientific standing of the journal? YES / NO

Did you carry out a literature search to help to guard against the increasing problem of duplication? YES / NO

If there was a textbook available specifically written to help practitioners to write and publish papers, would you use it? YES / NO

Has your practice got a well-stocked up-to-date library? YES/ NO

If an aspiring practitioner author approached you would you be happy to read and critique his paper? YES / NO

Would you be prepared for your name to be put on a list to be given to aspiring practitioner authors? YES / NO

I would value your views on In-practice research

Should practitioners perform it? YES / NO

Should it performed only by practitioners with extra qualifications? YES / NO

Should the results be published in peer reviewed journals? YES / NO

Should a piece of In-practice research be included as a compulsory module in the

new possible RCVS certificate? YES / NO

Should evaluation of this module be agreement for publication in a named peer reviewed journal? YES / NO

Please give the references of three papers, written by practitioners, which you have read in peer reviewed journals, which could be used as role models for aspiring authors.

1).....

2).....

3).....

Before you started doing in-practice research, did you define a specific area of research and set one specific question? YES / NO

Before you started doing in-practice research, did define a project methodology? YES / NO

Before you started doing in-practice research, did you have a specific journal in mind for publication? YES / NO

Before you started doing in-practice research, did you fund the time required accurately? YES / NO

Did you undertake in-practice research to satisfy an inquiring mind? YES / NO

Did you undertake in-practice research for personal fulfilment? YES / NO

Did you undertake in-practice research to solve a clinical dilemma for your own personal financial benefit? YES / NO

Did you undertake in-practice research to solve a clinical dilemma for the good of the individuals, which suffer from the condition? YES / NO

Did you undertake in-practice research as a route to further qualifications? YES / NO

Can you give one possible means to encourage practitioners to carry out in-practice .....

.....

Can you give one possible means to encourage practitioners to publish their results in peer reviewed journals.....

.....

Appendix K Interview form for unsuccessful practitioner authors in peer- reviewed journals

Name and Qualifications

Contact address

Contact telephone and fax numbers

E-mail address

Age group 20-25, 26-30, 31-40, 41-50, 51 or over

Main area of work when you wrote your unsuccessful paper?

GP, Referral GP, Teaching/Research, Industry, DEFRA ,Other Please state

How long have you been trying to publish a paper?

1-5yrs, 6-10yrs 11-20yrs 21+ years

Did you have help from outside of practice with your unsuccessful paper?

YES / NO

Did you use the notes supplied for contributors before writing your paper?

YES / NO

Were you aware that the sources of your references influenced the impact factor of the journal? YES / NO

Did you carry out a literature search to help to guard against the increasing problem of duplication? YES / NO

If there was a textbook available specifically written to help practitioners to write and publish papers, would you use it? YES / NO

Had your practice got a well-stocked up-to-date library? YES/ NO

As an aspiring practitioner author would you be happy to approach a successful author and ask for help with your paper? YES / NO

I would value your views on In-practice research

Should practitioners perform it? YES / NO

Should it performed only by practitioners with extra qualifications? YES / NO

Should the results be published in peer reviewed journals? YES / NO

Should a piece of In-practice research be included as a compulsory module in the new possible RCVS certificate? YES / NO

Should evaluation of this module be agreement for publication in a named peer reviewed journal? YES / NO

Please give the references of three papers, written by practitioners, which you have read in peer reviewed journals, which could be used as role models for aspiring authors.

1).....

2)...,,,,,,,,,.....

3).....

Before you started doing in-practice research, did you define a specific area of research and set one specific question? YES / NO

Before you started doing in-practice research, did you define a project methodology? YES / NO

Before you started doing in-practice research, did you have a specific journal in mind for publication? YES / NO

Before you started doing in-practice research, did you fund the time required accurately? YES / NO

Did you undertake in-practice research to satisfy an inquiring mind? YES / NO

Did you undertake in-practice research for personal fulfilment? YES / NO

Did you undertake in-practice research to solve a clinical dilemma for your own personal financial benefit? YES / NO

Did you undertake in-practice research to solve a clinical dilemma for the good of the individuals, which suffer from the condition? YES / NO

Did you undertake in-practice research as a route to further qualifications? YES / NO

Can you give the main reason why your paper was refused publication

.....

Can you give one possible means to encourage you to continue to try to publish your results in a peer reviewed journal.....

.....

Appendix L

Interview form for current editors of peer reviewed journals

Name and Qualifications

Contact address

Contact telephone and fax numbers
E-mail address
Previous editorial posts held with dates
Present editorial post held with starting date
When papers are presented to your journal do you carry out a preliminary screening? YES / NO
(Please put a double tick to the answers to the following questions if the decision is made by an editorial board rather than yourself)
Do you decide on whether the content is of interest to your readers? YES / NO
Do you decide on whether the scientific standard is adequate for your journal? YES / NO
Do you decide if the format is adequate enough compared with the notes supplied for contributors? YES / NO
Does the standing of the author influence you regarding likely publication? YES / NO
Does the source of the references influence you regarding likely publication? YES / NO
Do you have mechanisms in place to guard against the increasing problem of duplication? YES / NO
Could you grade the reasons why practitioners publish so few papers?

Reason	Very important	Important	Fairly important	Not important
Few papers presented				
Content not of interest				
Content not of higher enough scientific standard				
Layout not as required by notes to contributors				
Author not known				
Other Reasons Please State.....				

I would value your views on In-practice research

Should practitioners perform it? YES / NO

Should it performed only by practitioners with extra qualifications? YES / NO

Should the results be published in peer reviewed journals? YES / NO

Should a piece of In-practice research be included as a compulsory module in the new possible RCVS certificate? YES / NO

Should the evaluation of this module be that there is an agreement for publication in a named peer reviewed journal? YES / NO

To increase In-practice research, would your journal be prepared to commission the research? (I am not considering funding) YES / NO

Please give the references of three papers published in your journal, written by practitioners, which could be used as role models for aspiring authors.

1).....

2).....

3).....

Appendix M

Interview form for newly qualified veterinary surgeons.

1) Is your first job in PRACTICE or ACADEMIA or ELSEWHERE

2) Do you hope at some stage to get a higher qualification? YES / NO

3) Would you be happy to carry out research either in-practice research or academic research, regardless as to your type of employment? YES / NO

4) Do you feel your training before your finals has equipped you with the ability to carry out research? YES / NO

5) Would you like to have a manuscript published in a peer reviewed veterinary journal? YES / NO

6) Would you like a manuscript to be used for a method of assessment for a higher qualification? YES / NO

Appendix N

Interview form for final year veterinary students.

1) Do you hope that your first job will be in

PRACTICE or ACADEMIA or ELSEWHERE

2) Do you hope at some stage to get a higher qualification? YES / NO

3) Would you be happy to carry out research either in-practice research or academic research, regardless as to your type of employment? YES / NO

4) Do you feel your training before your finals has equipped you with the ability to carry out research? YES / NO

5) Would you like to have a manuscript published in a peer reviewed veterinary journal? YES / NO

6) Would you like a manuscript to be used for a method of assessment for a higher qualification? YES / NO

Appendix O

A retrospective study of clinical problems seen in pet pigs in practice in the UK

G.R.Duncanson, MSc (VetGP), BVSc, MRCVS, Westover Veterinary Centre, 40 Yarmouth Rd, North Walsham, Norfolk. NR28 9AT

Owners of pets pigs nation-wide criticise the veterinary care provided by general practitioners (Carr 2004). This study was performed to give an indication of the common conditions seen by a general practitioner, carrying out farm and equine work in North Norfolk in the last twenty years. The cases recorded were first opinion only. However many owners in the last five years have reported the difficulty in obtaining veterinary services. This is mainly because practices locally are specialising in small animals. However it is also due to the problem faced by practitioners who are engaged in commercial pig work who have to remain 'Pig free' for several days before going to commercial units, on whom they depend for their livelihood.

321 pet pigs were seen. Of these 188 were hybrid pigs obtained from commercial units. Only 23 of these were seen more than once. The 133 others were mainly Vietnamese pot-bellied pigs 78 (60%); there were also 18 kune kune (14%), 12 Tamworth (8%), 12 Gloucester Old Spot (8%), 9 Saddleback (7%), 3 Large Black (2%) and 1 Iron Age (1%). 79 of these pigs were seen more than once.

On the whole the owners of the hybrid pigs were better informed on pig husbandry or had the support of a pigman from a commercial unit. They were rarely seen more than once indicating they were not pets but were kept more as back yard pigs for slaughter. Therefore this study is concentrated on the other breeds, which could definitely be classed as pets.

The most common reason for call out was for routine husbandry conditions. 42 for foot trimming, 18 for castration and 4 for detusking. The other 69 conditions are shown below in Table 1

Problem	Number of pigs	(%)
Locomotory	28	(40%)
Arthritis	13	
Septic claws	9	
Deformed feet	5	
Off back legs	1	
Respiratory	7	(10%)
Pneumonia	5	
Rhinitis	2	
Cardiovascular	6	(9%)
Skin	19	(28%)
Abscess	7	
Wounds	6	
Mites/Lice	5	
Sunburn	1	
Intestinal	5	(7%)
Volvulus	3	
Stones in Small Intestine	2	
Urinogenital	4	(6%)
Farrowing	1	
Mastitis	1	
Renal problems	2	

All the conditions were dealt with at home. Owners although encouraged to bring their animals in to the centre declined to do so. It can be seen from these figures, when foot trimming and lameness are added together that locomotory problems make up the large majority of the problems. However it can been seen that over 25% of conditions required relatively urgent veterinary care. Sadly 23 of these cases lead to euthanasia within 48 hours. Naturally all the conditions require a high standard of care. This level of care maybe difficult to provide by dedicated small animal practices, which rarely make house calls. Equally the amount of pig

medicine and surgery taught at veterinary colleges has been reduced. Therefore all practices who are not able to give the required high standard of care required on a 24/7 basis should know the nearest practice which can provide that care. Such practices although by no means rated as 'specialist' by the Royal College of Veterinary Surgeons deserve a place on the new website.

Key Words Pet, Pig, Veterinary, Problems, Practitioner

Reference

CARR, J. (2004) Survey of clinical problems identified in pet pigs in the UK *Veterinary Record* **155** 269-271

Appendix P

Rejection Letter from the VR

THE
Veterinary
Record

Mr G.R.Duncanson
Westover Veterinary Centre
40 Yarmouth Rd
North Walsham
Norfolk NR28 9AT

November 18, 2004

Ref C3898

Dear Mr Duncanson

Re: **A retrospective study of clinical problems seen in pet pigs in practice in the UK** GR Duncanson

Thank you for submitting the above short communication to be considered for publication in *The Veterinary Record.* The manuscript has been returned by our scrutineers and I am sorry to have to tell you that it has not been recommended for publication in this journal.

The scrutineer commented that the content was not suitable for publication as a short communication in the Veterinary Record, but suggested that you resubmit it as a letter to the Editor.

Thank you for letting us see the article. I am sorry that it was not thought suitable for publication

Yours sincerely

Jackie Grant
Assistant Editor

Appendix Q 1

The Veterinary Record Instructions for Authors

Contributions in the form of original research papers, review articles, clinical case histories, short communications and letters on all aspects of veterinary medicine and surgery are invited. All except letters are refereed. Submissions are accepted on the understanding that they have not been published elsewhere and that they are subject to editorial revision. All material published is the copyright of The British Veterinary Association. Submissions should be sent to The Veterinary Record, 7 Mansfield Street, London W1G 9NQ. Procedures for the electronic submission and tracking of manuscripts are being developed within this website, and will become available later this year.

For general editorial inquires regarding The Veterinary Record, email Editorial.

Format

Manuscripts should be typed, double-line spaced, on one side of the paper only and with wide margins. A covering letter and three copies of the manuscript should be submitted together with three sets of any illustrations. All abbreviations should be spelt out in full the first time they are used in the text. Medicines should be referred to by the generic name (Recommended International Non-Proprietary Name), followed by the proprietary name and manufacturer in brackets when first mentioned; eg, fenbendazole (Panacur; Intervet).

Papers

Papers should include a title of not more than 15 words, the names, qualifications and addresses of each author, and a summary of not more than 200 words. They should be set out in the following sections: summary, introduction, materials and methods, results, discussion, acknowledgements and references. Clinical papers or case reports should follow a similar overall arrangement, modified

appropriately. The text should be as concise as possible; the whole length should not exceed 4000 words (that is, about four to five pages of The Veterinary Record). Five keywords should be supplied to accompany the paper.

Short communications

Preliminary accounts of work and short clinical reports for publication as short communications should follow a similar format to papers but should exclude a summary and separate subheadings. The title should be no more than 10 words in length, the text should not exceed 750 words and only one or two figures and/or tables should be included. Five keywords should be supplied to accompany the short communication.

Letters

Letters on all topics related to the science, practice and politics of veterinary medicine and surgery will be considered for publication. They should be typed in double-line spacing on one side of the paper only. The length should not exceed 400 words and the editor reserves the right to shorten letters for publication. References should be quoted only when absolutely necessary. Illustrations and tables suitable for reproduction will occasionally be allowed. Letters can be submitted by post, fax or e-mail and must give full address details of all authors as well as a contact telephone number. Submit a letter to the editor via email.

Tables and illustrations

Tables should be kept to a minimum and presented separately from the text. The legend should clearly explain what data the table is presenting without the need to refer back to the text. Tables should not duplicate information presented in figures.

Line figures and photographs will normally be reproduced at column width (76 mm). The author's name, title of the paper and number of the figure should be pencilled lightly on the back of each illustration. Colour or black and white transparencies and prints are acceptable. Where transparencies are submitted,

they should be accompanied by a set of prints. Prints should be clear and sharp. X-rays should be submitted as good quality prints. Histograms should be presented in a simple, two-dimensional format, with no background grid; tones should be avoided.

Digital images should be sent as JPEG or TIFF files, scanned in CMYK format, at a minimum resolution of 300 dpi at an image size of 8.5 cm accross. Please label them to correspond with the list of numbered figure captions; for example 'Figure 3.jpg' or 'Figure 7B.jpg', etc

References

In the text references should be cited as follows: Smith (1995) described.../...recorded earlier (Brown and Jones 1994, Smith and others 1997). Lists of references should be given in date order in the text but alphabetically in the reference list.

In the reference list all authors' names and initials should be given followed by the date, title of the paper, full title of the journal, volume number and full page range, eg: SMITH, A. B., JONES, C. D. & BROWN, E. F. (1995) How to list your references. Veterinary Record xxx, 71-76

Book references should include the chapter title if appropriate, the full title of the book, the edition, the editors, the town of publication, publisher and page numbers of material referred to, eg: SMITH, A. B., JONES, C. D. & BROWN, E. F. (1993) How to list your references. In Getting It Right. 3rd edn. Eds S. Adams, J. Alexander. London, Society of Reference Publishers. pp 23-37

Proceedings should include the title of the paper given at the meeting, proceedings title, the editors (if applicable), town, country, month date a to b, year, and page numbers (if applicable), eg: MILLER, W. (1976) A state-transition model of epidemic foot-and-mouth disease. Proceedings of an International

Symposium: New Techniques in Veterinary Epidemiology and Economics. Reading, UK, July 12 to 15, 1976. p 56

Websites should include the title of the page, website address and date accessed, eg: DEFRA (2001) Explanation of Foot and Mouth Restrictions. www.defra.gov.uk/animalh/diseases/fmd/disease/restrictions/explanation.asp. Accessed August 24, 2001

Personal communications should be cited within the text and follow the form 'A. B. Smith, personal communication'.

Measurements

Measurements should be expressed in the metric system or in SI units. Temperatures should be given in °C. Centrifugation speeds should be given in g.

Ethics

Papers may be rejected on ethical grounds if the severity of the experimental procedure does not appear to be justified by the value of the work presented.

Appendix Q 2

Instructions for Authors – EVJ

Equine Veterinary Journal (EVJ) publishes original articles and reviews on all aspects of equine veterinary science. Categories include Editorial Leaders, General Articles, Clinical Evidence Articles, Short Communications, Case Reports and Review Articles.

Papers submitted are assessed by at least two referees and, if accepted for publication, the copyright becomes the property of EVJ Ltd. Submitted papers should be accompanied by a signed statement that the paper:

1. is original
2. has not been submitted or published elsewhere
3. has the approval of all authors.

If abstracts only have been published, full papers will be considered but a copy of the abstract should accompany the submitted paper. If reference is made to papers cited as 'in press', 3 copies should be provided. If material is used that has been published elsewhere or is given as a personal communication, it is the author's responsibility to obtain permission from the publisher and author. The Editor's decision is final.

Any direct or indirect commercial interest in any product under study held by any of the authors of a paper must be declared at the time of submission of the paper and will be brought to the attention of readers at the time of publication.

Authors are requested to enclose payment of the £50 submission fee towards the cost of the peer review process with their manuscript on submission (all major credit cards accepted; if you prefer to pay by cheque, these should be in UK pounds sterling, drawn on a UK bank and made payable to EVJ Ltd.).

Manuscripts should be sent to:

The Editor, Equine Veterinary Journal, 351 Exning Rd, Newmarket, Suffolk. CB8 0AU UK

Communications on editorial matters may be sent to the address above, or:

Tel:+44(0)1638666160
Fax:+44(0)1638668665
Email: viv@evj.co.uk

General Instructions

Disks

A disk, preferably compatible with Apple Macintosh, Word 5.0/6.0 or QuarkXpress (v. 4.11) format, is requested on submission of the paper and should be returned with the final revision. If the disk is not compatible, please state the format and word processor used. If a disk is not made available there will be a charge of £70.00 ($110).

Format

All manuscripts, figures and tables should be submitted in triplicate (original and 2 copies) and also on disk. This includes revised manuscripts; the final accepted version of a manuscript must be supplied on disk. Please save your document in Microsoft Word, formatted for Macintosh. Manuscripts should be typed in double spacing on A4 paper (single-sided) with margins of at least 2 cm and the pages and text lines should be numbered. The first page should include the title, which should accurately describe the subject matter, the name(s) of the author(s), the Institution where the work was done (full postal address/es), any present address(es), contact details (telephone number, fax number and email address) and about 5 relevant keywords. Authors are also requested to provide a word count. Papers should be no more than 4000 words including references. Division of the paper should be indicated clearly by major headings, subheadings and sub-subheadings.

Doses and measurements should be given in metric (SI) units with /kg bwt added where appropriate. Specialised abbreviations must be explained. Spelling should conform to the Oxford English Dictionary, medical terminology to Dorlands Medical Dictionary and units, symbols and abbrevations should conform to the International System of Units defined by Baron, D.N. (Ed) (1994) 'Units, Symbols, and Abbrevations: A Guide for Medical and Scientific Editors and Authors, 5th

edn.' Royal Society of Medicine Press, London. All quantitative results should be analysed by appropriate statistical methods.

Summaries

The objective of the Summary format used in EVJ is to make the papers contained in the journal more acceptable to clinical readership so as to encourage them to read the paper in full and to understand the reasons why the work was performed; and also to emphasise its potential for clinical relevance and/or the need for further research.

Authors should prepare the Summary carefully and cover the main outcomes of the study under the following headings:

- **Reasons for performing study**: i.e. why the work was undertaken in the first place, the background behind the decision to choose this subject to study.
- **Hypothesis or Objectives**: The statement which is being tested, and is testable by the methods (below); or the original aims of the study, the deliverables.
- **Methods**: Brief description of materials and methods, study design, methods of testing hypothesis.
- **Results**: Brief highlights of the results obtained.
- **Conclusions**: Conclusions drawn from results.
- **Potential relevance**: The potential relevance/significance of the results to clinical application and/or the need for further research; and/or the need for further work.

In adopting this format, it should be remembered that a Summary is provided to encourage the reader both to think more deeply about the subject involved as well as to read the paper in full. Too much detail can confuse rather than clarify in both aspects of this intention. It is permissible to include data and P values but the work presented should stand upon a full reading of the paper, not on the basis of the Summary itself.

The same applies to conclusions, since it is up to the readers to draw their own conclusions upon the reading of the paper, and care should be taken by the authors not to overstate their conclusions.

Tables

Tables should be referenced in the appropriate place in the text, typed on separate sheets and accompanied by adequate headings and legends. Duplication of data in tables, figures and text should be avoided. Tables should be limited to no more than 3.

Illustrations

Illustrations should be provided when necessary to clarify the text. The legends should be intelligible without reference to the text. Figures should also be referred to in the text. Authors may be charged a fee for publication of more than six illustrations (this includes figures labelled a, b, c etc.). Photographs, radiographs and photomicrographs should be presented as high quality prints or as originals. The 'top' should be indicated on the reverse side together with the figure number and the author's name. Photomicrographs must state magnification, preferably with a scale bar, and staining technique. Line drawings should be original diagrams on clean white paper or board. Symbols and lines should be standard and not drawn by hand. Any tables or illustrations which have been published previously should include a suitable acknowledgement to the original source. It is the author's responsibility to obtain permission for their reproduction. Illustrations can now be provided digitally on Zip disk or CD-ROM. They must be a MINIMUM resolution of 300 dpi at an image size of 85 mm (width). Illustrations at a resolution of 72 dpi are not acceptable.

Colour

Authors of articles containing colour figures are required to provide funding for colour reproduction, which will be in the region of £800 per page. We will attempt to minimise the number of pages for which funding must be supplied, but the final layout of the figures depends on their size, format and the order in which they appear.

Manufacturers' addresses

The generic name should be given in the text with product name in parentheses, followed by a number indicating a footnote, e.g. phenylbutazone (Equipalazone)1. The manufacturer's details (company name, town/city, state/county and country where manufacturer is based) should then be listed under a heading at the end of the article before the Reference section.

References

References in the text are given as the author(s) and year, i.e. (Evans 1961; Smith and Jones 1990) or Evans (1961). Papers with more than 2 authors are cited as et al., i.e Jones *et al.* (1989). References in the text within the same parentheses are given in chronological order. The final list of references should be alphabetical. References by the same first author and published in the same year should be labelled a, b, c etc within the text (e.g. Smith 1992a) and listed sequentially in the reference list.

The format in the reference list is as follows: author(s) name(s) and initials, year of publication in parentheses, full title of article, journal title as abbreviated in the World List of Scientific Periodicals, volume number and page numbers:

e.g. Foster, B.W., Codd, J. and Smith, R. (1992) Effect of stress on ulcers in foals. *Equine vet. J.* **35**, 43-52.

References to book articles should be set out as follows: author(s) name(s) and initials, date of publication in parentheses, title of chapter or article, full title of book, edition, name(s) of editor(s) if relevant, publisher, place of publication and pages referred to:

e.g. Robin, C. (1991) Calcium in plants eaten by horses. In: *Dietary Calcium*, 2nd edn., Ed: J. Chalk, Blackwells Scientific, London. pp 195-201.

Proofs

The corresponding author will receive proofs prior to publication. These should be read and returned with corrections immediately. Major alterations will be accepted only at the author's expense.

Reprints

A reprint order form will accompany the proofs and should be completed and returned with them, whether or not reprints are required. Ordering of reprints after

you have returned the proofs will incur considerable expense which would have to be borne by the author(s).

Editorial Leaders

These are often written by the Editors or members of the Editorial Board. However, guest editorials are always welcome. They can relate to the content of the issue, providing a useful means of introducing, and generating interest in, specific subjects. They may also be independent of other content and they give an opportunity to express opinions on any matters of interest to the veterinary profession. Editorials should be approximately 1000 words and may include a limited number of references. All EVJ editorials are signed.

Clinical Evidence Articles

Clinical evidence articles should:

- Address a clearly defined clinical question.
- Conform in length to General Articles (see below).
- Provide objective and unambiguous case definition criteria which are rigorously applied.
- Evaluate clearly defined clinical outcomes that are rigorously applied.
- Describe studies that are controlled, randomised and blinded as appropriate or feasible.
- Include a pre-study estimate of the power of the study to resolve a clinically useful difference (or other appropriate estimation of numbers required). For therapy or prevention trials, this power value should be 80% or more.
- Report the confidence intervals of any results.
- Describe studies, based on naturally-occurring disease, that provide strong clinical evidence to define outcomes relating to specific therapeutic or diagnostic interventions, to refine prognostic indicators and/or to provide an aid to informed clinical decision-making regarding specific problems encountered in contemporary equine practice.

Articles submitted for this category are subject to the same review process as for General Articles. Those articles accepted in this category will be fast-tracked for publication, as are Short Communications, and will be published wherever possible within 3 months of acceptance.

Short Communications

Articles accepted in this category will be fast-tracked for publication. They should be no more than 2000 words in length, and should contain no more than 2 figures and 2 tables. A summary need not be supplied for Short Communications.

Case Reports

Case Reports will be accepted only if they contain no less than 4 cases, unless the report concerns a case of particularly high scientific interest and relevance. A summary need not be supplied for Case Reports, and they should be no more than 2500–3000 words in length.

Review Articles

Review Articles are welcome; a preliminary discussion with the Editor regarding subject and length of the article is advisable before submission.

General Articles

Content

The content of the paper should state clearly the: a) hypothesis being tested, b) objectives, c) study design and d) implications/significance of the study to clinical practice and/or further research. All papers containing experimental protocols are subjected to ethical review and should contain information regarding ethical standards of the institute of origin. Reports of clinical trials are welcome but authors are recommended to consult Altman, D.G. (1996) Better reporting of randomised controlled trials: the CONSORT statement. *Br. med. J.* **313**, 570-571.

Length of manuscript

The current heavy submission rate to EVJ has necessitated our making a decision strictly to enforce the current word limit of 4000 words, and 6 pages or less of the Journal, for General Articles. Authors are advised that, if this limit cannot be adhered to, a fee of £100 per page will be levied for each page over

and above 6. The objective is to publish as many papers as possible within as short a period as possible between acceptance and publication.
As a guide, 4000 words, 3 or 4 figures and 2 tables would fit into 6 pages (see article by Holcombe et al. [2001] Equine vet. J. 33, 244-249 in the archive).

Appendix Q 3

Instructions for Authors – EVE

Equine Veterinary Education (EVE) is a continuing education journal aimed, primarily, at clinicians. All articles published in this journal are of a practical, informative nature and appear under various headings including Editorials, Case Reports, Clinical Commentaries, Satellite Articles, Special Articles, Tutorial Articles and Refresher Articles.

Papers submitted are assessed by at least two referees and, if accepted for publication, the copyright becomes the property of EVJ Ltd. Submitted papers should be accompanied by a signed statement that the paper:

4. is original
5. has not been submitted or published elsewhere
6. has the approval of all authors.

If abstracts only have been published full papers will be considered, but a copy of the abstract should accompany the submitted paper. If reference is made to papers cited as 'In Press', 2 copies should be provided. If material is used that has been published elsewhere or is given as a personal communication, it is the author's responsibility to obtain permission from the publisher and author. The Editor's decision is final.

Any direct or indirect commercial interest in any product under study held by any of the authors of a paper must be declared at the time of submission of the paper and will be brought to the attention of readers at the time of publication.

Manuscripts should be sent to: The Editor, Equine Veterinary Journal, 351 Exning Rd, Newmarket, Suffolk. CB8 0AU. UK

Communications on editorial matters may be sent to the address above, or:

Tel:+44(0)1638666160

Fax:+44(0)1638668665

Email: viv@evj.co.uk

General Instructions

Disks

A disk, preferably compatible with Apple Macintosh, Word 5.0/6.0 or QuarkXpress (v. 4.11) format, is requested on submission of the paper and should be returned with the final revision. If the disk is not compatible, please state the format and word processor used. If a disk is not made available there will be a charge of £70.00 ($122.50).

FORMAT

All manuscripts, figures and tables should be submitted in triplicate (original and two copies) and also on disk. Please save your document in Microsoft Word, formatted for Macintosh. Manuscripts should be typed in double spacing on A4 paper (single-sided) with margins of at least 2 cm. The first page should include the title, author(s) names, place of work, full postal address and contact details - telephone number, fax number and email address if possible - plus about 5 relevant keywords. All subsequent pages should be numbered.

All doses and measurements should be provided in metric (SI) units with '/kg bwt' added where appropriate. Specialised abbreviations must be explained. Spelling should conform to the Oxford English Dictionary, medical terminology to Dorlands Medical Dictionary and units, symbols and abbrevations should conform to the International System of Units defined by Baron, D.N. (Ed) (1994) 'Units, Symbols, and Abbrevations: A Guide for Medical and Scientific Editors and Authors, 5th edn.' Royal Society of Medicine Press, London.

Tables

Tables should be used to avoid lengthy descriptions of results and must be referred to in the text. They should be easy to understand and accompanied by explanatory captions.

Illustrations

Photographs, radiographs and photomicrographs should be presented as high quality prints or as originals. The 'top' should be indicated on the reverse side together with the figure number and the author's name. Photomicrographs must

state magnification, preferably with a scale bar, and staining technique. Line drawings should be original diagrams on clean white paper or board. Symbols and lines should be standard and not drawn by hand. Any tables or illustrations which have been published previously should include a suitable acknowledgement to the original source. It is the author's responsibility to obtain permission for their reproduction.

Illustrations can now be provided digitally on Zip disk or CD-ROM. They must be a minimum resolution of 300 dpi at an image size of 85 mm (width). Illustrations at a resolution of 72 dpi at this size are not acceptable.

Colour

Colour reproduction within EVE is free of charge. However, it cannot be guaranteed that all figures supplied in colour will be able to be reproduced in colour, particularly if an article contains a large number of figures.

References

References in the text are given as the author(s) and year, i.e. (Evans 1961; Smith and Jones 1990) or Evans (1961). Papers with more than 2 authors are cited as *et al.* i.e Jones *et al.* (1989). References in the text within the same parentheses are given in chronological order. The list of references should be alphabetical; references by the same first author and published in the same year should be labelled a, b, c etc within the text (e.g. Smith 1992a) and listed sequentially in the reference list.

The format in the reference list is as follows: author(s) name(s) and initials, year of publication in parentheses, full title of article, journal title as abbreviated in the World List of Scientific Periodicals, volume number and page numbers:

e.g. Foster, B.W., Codd, J. and Smith, R. (1992) Effect of stress on ulcers in foals. *Equine vet. J.* 35, 43-52.

References to book articles should be set out as follows: author(s) name(s) and initials, year of publication in parentheses, title of chapter or article, full title of book, edition, name(s) of editor(s) if relevant, publisher, place of publication and page numbers:

e.g. Robin, C. (1991) Calcium in plants eaten by horses. In: *Dietary Calcium*, 2nd edn., Ed: J. Chalk, Blackwells Scientific, London. pp 195-201.

Proofs

The corresponding author will receive proofs prior to publication. These should be read and returned with corrections immediately. Major alterations will be accepted only at the author's expense.

Reprints

A reprint order form will accompany the proofs and should be completed and returned with them, whether or not reprints are required. Ordering of reprints after you have returned the proofs will incur considerable expense which would have to be borne by the author(s).

Editorials

These are often written by the Editors or members of the Editorial Board. However, guest editorials are always welcome. They can relate to the content of the issue, providing a useful means of introducing, and generating interest in, specific subjects. They may also be independent of other content and they give an opportunity to express opinions on any matters of interest to the veterinary profession. Editorials should be approximately 1,000 words and may include a limited number of references. All EVE editorials are signed.

Case Reports

Practitioners are particularly interested in Case Reports which enable them to relate other veterinarians' clinical experiences to their own. Single or multiple cases are acceptable and they should be presented clearly, with events recorded in chronological order or under headings where appropriate: Introduction, Case history, Clinical findings, Diagnosis, Treatment, Outcome, Post mortem, Findings (where applicable) and Discussion. The use of sub-headings to separate areas of information is encouraged. Figures and tables should be used, if necessary, to complement rather than duplicate the text. The recommended length is 2000 words, although this is dependent upon the nature of the report.

Clinical Commentaries

The purpose of Clinical Commentaries is to expand on aspects of cases reported in EVE under the Case Report banner. Clinical Commentaries are intended as mini Satellite Articles to provide readers with the opportunity of learning the opinion and comments of a colleague with a special interest and knowledge of the subject. Freedom of expression on any aspect of the case report is encouraged.

The commentaries are 500–2000 words in length and may contain figures and illustrations where appropriate.

Satellite Articles

Upon acceptance of a Case Report, the Editors commission accompanying Satellite Articles. These are intended to provide background information on specific aspects of the Case Report, e.g. pathology, pharmacology, neurology. The aim is to supply readers with answers to at least some of the questions which arise from the Case Report or to expand on a particular aspect of the topics covered. The length of these articles depends upon the range of the subject, but 2000 words is recommended.

Special Articles

Papers submitted to EVE under this category should have a high scientific content and contain original work. Papers submitted and accepted for publication in this category are eligible for the Richard Hartley Clinical Prize, previously only awarded to papers submitted to EVJ. Articles should be no more than 4000 words in length including references and tables and should include illustrations.

Tutorial Articles

Tutorial Articles are intended to give a comprehensive review of a subject, incorporating aetiology, pathology, diagnosis, clinical aids, therapy and/or prognosis as appropriate. These articles should summarise the current knowledge relating to the subject and, in some cases, discuss means of improving understanding. Some subjects are too wide-ranging to be discussed in one article and, in this event, a series of articles will appear in consecutive issues. Individual articles can be up to 4000 words long and a full reference list should be supplied.

Refresher Articles

Refresher Articles should provide an 'update' on subjects which are encountered commonly by practitioners. They should be largely pictorial and serve as a reminder of available techniques or a description of modifications. The majority of these articles are no more than 1,500 words.

Correspondence

The Editors welcome correspondence on any subject. If a letter relates to an article published in a previous issue, it is usual for a copy to be sent to the author(s) of that article who will be given a chance to respond.

Appendix Q 4

Instructions for authors JSAP

The *Journal of Small Animal Practice* publishes original research on all aspects of small animal medicine and surgery. The target audience is primarily veterinarians in small animal practice. Manuscripts submitted for publication are subject to peer review. If accepted for publication, the copyright in all forms/languages becomes the property of the British Small Animal Veterinary Association. Authors are advised to review the following instructions carefully when preparing manuscripts. Failure to conform to these guidelines may result in the manuscript being returned.

MANUSCRIPTS

Preference is given to reports of original or retrospective studies. Review articles are usually commissioned by the editor but may be considered provided they add materially to the current published literature, either by the inclusion of different or extra studies and/or by the conclusions drawn. *Reports of single or small numbers of cases will be considered if the case(s) are particularly unusual, or the report contributes materially to the published literature.* Any author wishing to make a submission should send a covering letter with their manuscript, emphasising the particular reason(s) why the paper should be considered for publication.

Manuscripts submitted to, or published in, other refereed English or foreign language journals will not be considered for publication.

The work described in any paper or case report should conform to UK standards pertaining to animal welfare. Where experimental studies have been performed, the author(s) must include a statement within the text confirming that the appropriate licence or ethical approval was obtained.

SUBMISSION REQUIREMENTS

The JSAP prefers to receive all manuscript submissions electronically. To submit a manuscript, please follow the instructions below. Manuscripts should be submitted online at http://mc.manuscriptcentral.com/jsap.

Full instructions and support are available on the site and a user ID and password can be obtained on the first visit. Support can be contacted by phone (+1 434 817 2040 ext. 167), e-mail (support@scholarone.com) or at http://blackwellsupport.custhelp.com. If you cannot submit online, please contact Kathryn Wheeler in the Editorial Office by telephone (01452 726719) or by e-mail (jsapadmin@bsava.com).

All other communications should be sent to The Editor, *Journal of Small Animal Practice*, BSAVA, Woodrow House, 1 Telford Way, Waterwells Business Park, Quedgeley, Gloucester GL2 2AB or jsapeditor@bsava.com.

CONTRIBUTORS

The contact author must ensure that all individuals or groups who have materially contributed to the information presented are either included as coauthors or acknowledged appropriately. In addition, all authors listed on the manuscript should have made significant contribution to the work and have reviewed and approved the manuscript. Acknowledgement of those playing more minor roles should be made at the end of the manuscript. If statistical analysis is included, the statistician/epidemiologist involved in the paper must be named as an author or included in the acknowledgements. This person must be willing to discuss the statistical methods with the reviewers, if necessary.

FORMAT

Structure of manuscripts

Manuscripts should be headed with the full title of up to 15 words, which should describe accurately the subject matter.

Papers Each paper should comprise the following sections:

Structured Summary – maximum of 200 words, divided, under separate headings, into Objectives, Methods, Results, Clinical Significance.

Keywords – maximum of five, to reflect the content of the paper.

Introduction – brief overview of the subject, statement of objectives and rationale.

Materials and Methods – clear description of experimental and statistical methods and procedures (in sufficient detail to allow others to reproduce

the work).

Results – stated concisely, and in logical sequence, with tables or figures as appropriate.

Discussion – with emphasis on new and important implications of the results and how these relate to other studies.

Case reports Each case report should comprise a Summary (maximum of 150 words), Keywords (maximum of five), Introduction, Case Histories and Discussion.

Style

Writing should conform to acceptable English usage. Where abbreviations are used, the word or phrase must be given in full on the first occasion.

Notes for contributors

All units of measurement should be given in the metric system or in SI units. Temperatures should be in °C.

Drugs should be referred to by Recommended International Non-Proprietary Name, followed by proprietary name and manufacturer in brackets when first mentioned, eg, fenbendazole (Panacur; Intervet).

Anatomical terminology should conform to the nomenclature published in the Nomina Anatomica Veterinaria (1983) 3rd edn. Eds R. E. Habel, J. Frewein and W. O. Sack. World Association of Veterinary Anatomists, Ithaca, New York.

Length

The maximum length for research papers is 3000 words and for case reports is 1500 words. Review articles should not exceed 4000 words.

All word limits include the summary but exclude the reference list. Authors should indicate the word count at the beginning of the manuscript.

Tables and figures

The minimum number of tables and figures necessary to clarify the text should be included and should contain only essential data. Photographs should be clear and sharp, and in colour where possible. Photomicrographs must state magnification and stain technique.

Note: Image files accompanying a submitted manuscript must be

supplied electronically in separate files to the main text. If your manuscript is accepted, you may be requested to submit higher quality images in CMYK to the journal. For the peer-review process to be completed, please submit files in RGB format.

References

When references are cited in the text, the name of the author and the year should be in brackets, eg, (Smith 1980). If the author's name is an integral part of the sentence, the date only is placed in brackets, eg, as reported by Smith (1980). For more than two authors, (Smith and others 1980) should be used. Where several references are quoted together, they should be placed in chronological order.

At the end of the paper the references should be listed in alphabetical order of the first author's name and set out as follows:

Staudte, K. L., Hopper, B. J., Gibson, N. R. & Read, R. A. (2004) Use of ultrasonography to facilitate surgical removal of non-enteric foreign bodies in 17 dogs. *Journal of Small Animal Practice* 45, 395-400

References to books should be listed as follows:

Ford, R. B. (1995) Canine hyperlipidaemia. In: Textbook of Veterinary Internal Medicine. 4th edn. Eds S. J. Ettinger and E. C. Feldman. W. B. Saunders, Philadelphia. pp 1414-1419

Conference proceeding abstracts should be listed as follows:

Hill, J. R. (2000) Nodular cutaneous dirofilariasis in a cat. Proceedings of the International Society of Veterinary Dermatopathology. August 30 to 31, San Francisco, USA. pp 6-7

PEER REVIEW PROCESS

All articles submitted to the journal may be pre-reviewed by the editor and/or the editorial board to ensure they conform to the above guidelines. Manuscripts that fail to meet the above requirements will not be sent for review and you will be asked to resubmit in an appropriate format. The *JSAP* reserves the right to reject any manuscript.

Manuscripts that enter the peer review process will be examined by at

least two expert reviewers. Those approved by the reviewers are accepted for publication subject to the authors addressing all editorial and production concerns. Manuscripts are processed in the order they are received. However, at the editor's discretion, papers of particular merit may be 'fast-tracked' for early publication.

Authors should allow up to three months for initial scientific and editorial assessment of submitted manuscripts, but manuscript progress can be tracked online.

FINAL PROOFS

All accepted manuscripts are subject to copyediting and editorial revisions. The contact author will be sent final proofs for approval. The author is responsible for ensuring that statements in the work and references are accurate at this final stage.

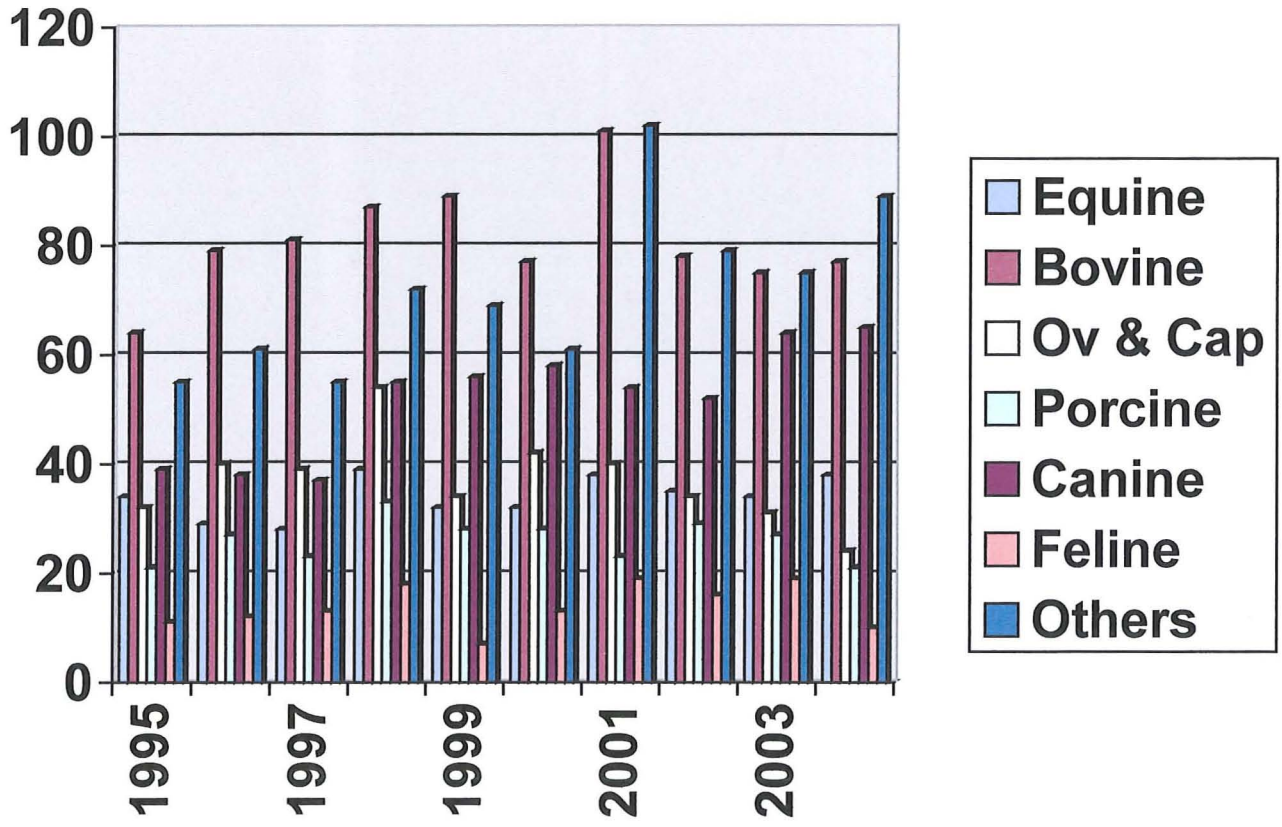
LETTERS TO THE EDITOR

Letters describing case reports or original material may be published in the *JSAP* and will be peer-reviewed prior to publication. Letters commenting on recently published papers will also be considered and the authors of the original paper will be invited to respond. Submissions should be made online but can also be sent to the Editor at jsapeditor@bsava.com.

New notes for contributors 9/23/05 4:16 PM Page iv

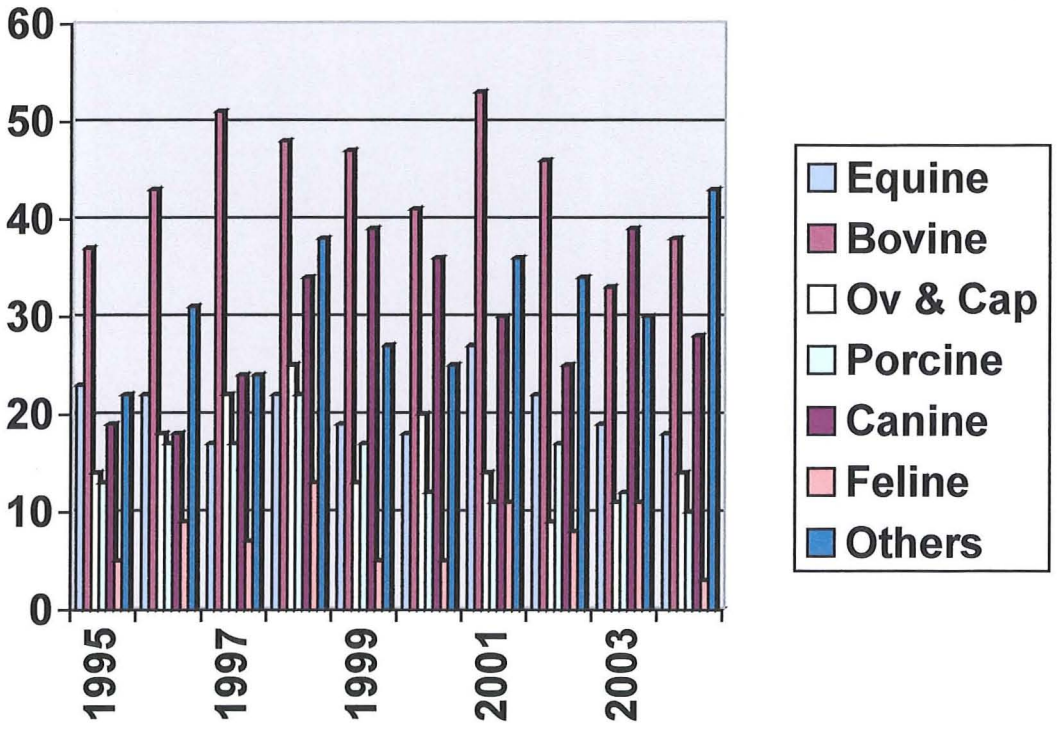
Appendix R1 Total number of articles in the VR 1995-2004

Year	Equine	Bovine	Ov&Ca	Porcine	Canine	Feline	Others
1995	34	64	32	21	39	11	55
1996	29	79	40	27	38	12	61
1997	28	81	39	23	37	13	55
1998	39	87	54	33	55	18	72
1999	32	89	34	28	56	7	69
2000	32	77	42	28	58	13	61
2001	38	101	40	23	54	19	102
2002	35	78	34	29	52	16	79
2003	34	75	31	27	64	19	75
2004	38	77	24	21	65	10	89
total	339	807	370	260	518	138	718



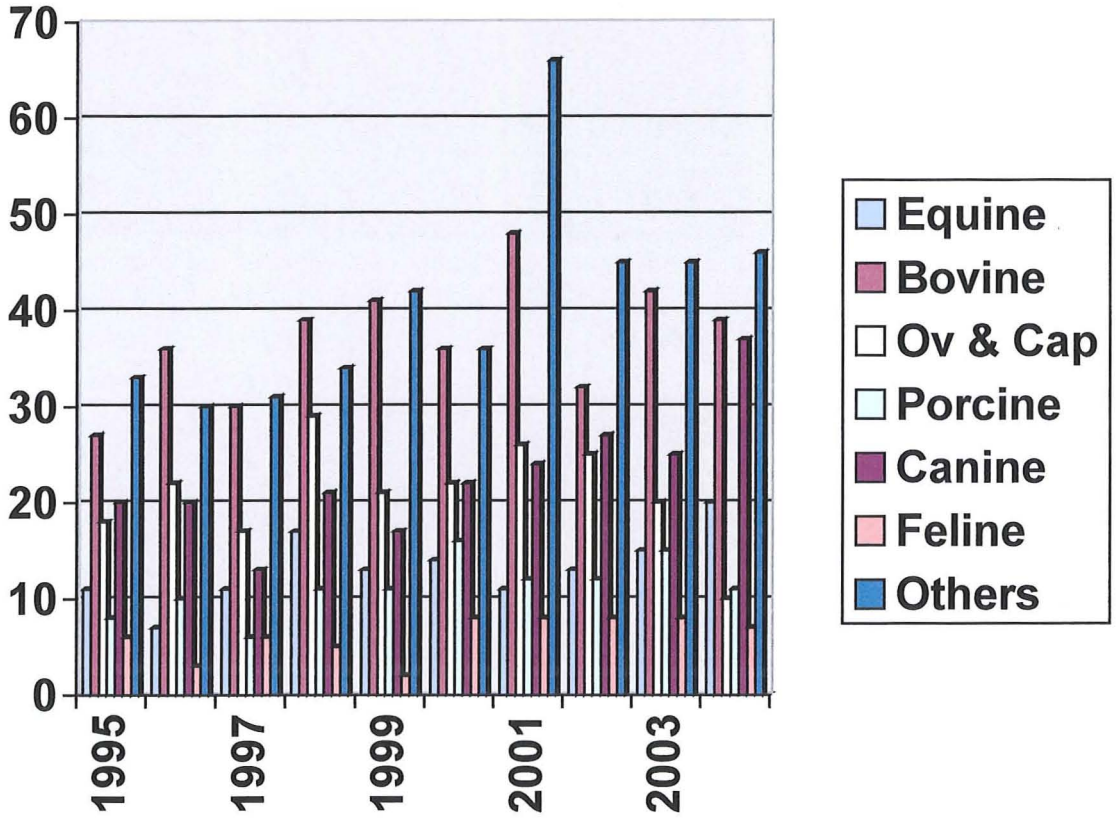
Appendix R2 Total number of papers in the VR 1995-2004

Year	Equine	Bovine	Ov&Ca	Porcine	Canine	Feline	Others
1995	23	37	14	13	19	5	22
1996	22	43	18	17	18	9	31
1997	17	51	22	17	24	7	24
1998	22	48	25	22	34	13	38
1999	19	47	13	17	39	5	27
2000	18	41	20	12	36	5	25
2001	27	53	14	11	30	11	36
2002	22	46	9	17	25	8	34
2003	19	33	11	12	39	11	30
2004	18	38	14	10	28	3	43
total	207	437	160	148	292	77	310



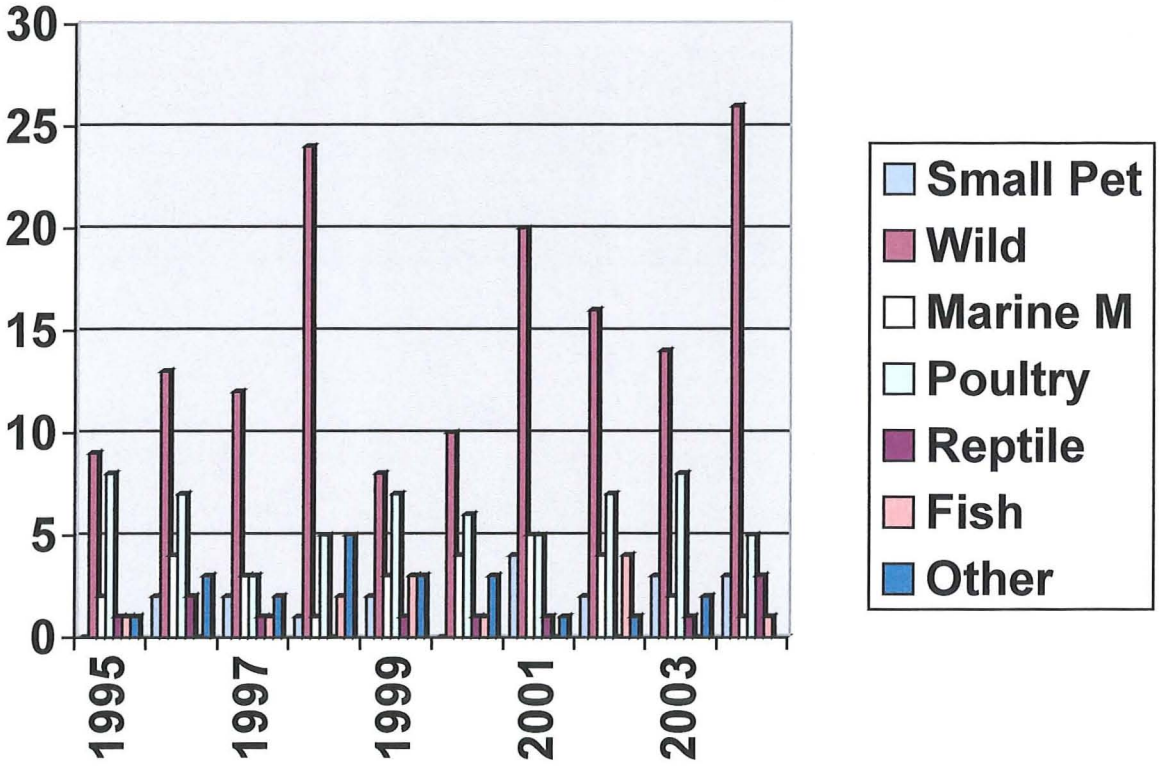
Appendix R3 Total number of short communications in the VR 1995-2004.

Year	Equine	Bovine	Ov&Ca	Porcine	Canine	Feline	Others
1995	11	27	18	8	20	6	33
1996	7	36	22	10	20	3	30
1997	11	30	17	6	13	6	31
1998	17	39	29	11	21	5	34
1999	13	41	21	11	17	2	42
2000	14	36	22	16	22	8	36
2001	11	48	26	12	24	8	66
2002	13	32	25	12	27	8	45
2003	15	42	20	15	25	8	45
2004	20	39	10	11	37	7	46
total	132	370	210	112	226	61	408



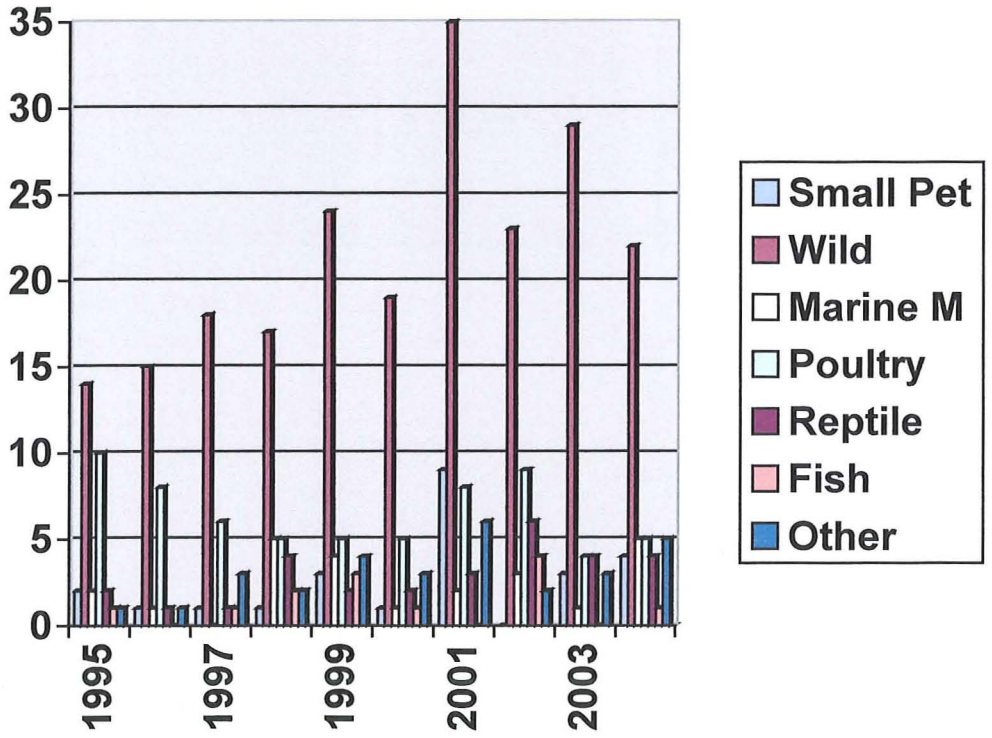
Appendix R 4 Total number of 'other' papers in the VR 1995-2004.

Year	Small Pet	Wild	Marine M	Poultry	Reptile	Fish	Other	Total
1995	0	9	2	8	1	1	1	22
1996	2	13	4	7	2	0	3	31
1997	2	12	3	3	1	1	2	24
1998	1	24	1	5	0	2	5	38
1999	2	8	3	7	1	3	3	27
2000	0	10	4	6	1	1	3	25
2001	4	20	5	5	1	0	1	36
2002	2	16	4	7	0	4	1	34
2003	3	14	2	8	1	0	2	30
2004	3	26	1	5	3	1	4	43
Total	19	152	29	61	11	13	25	310



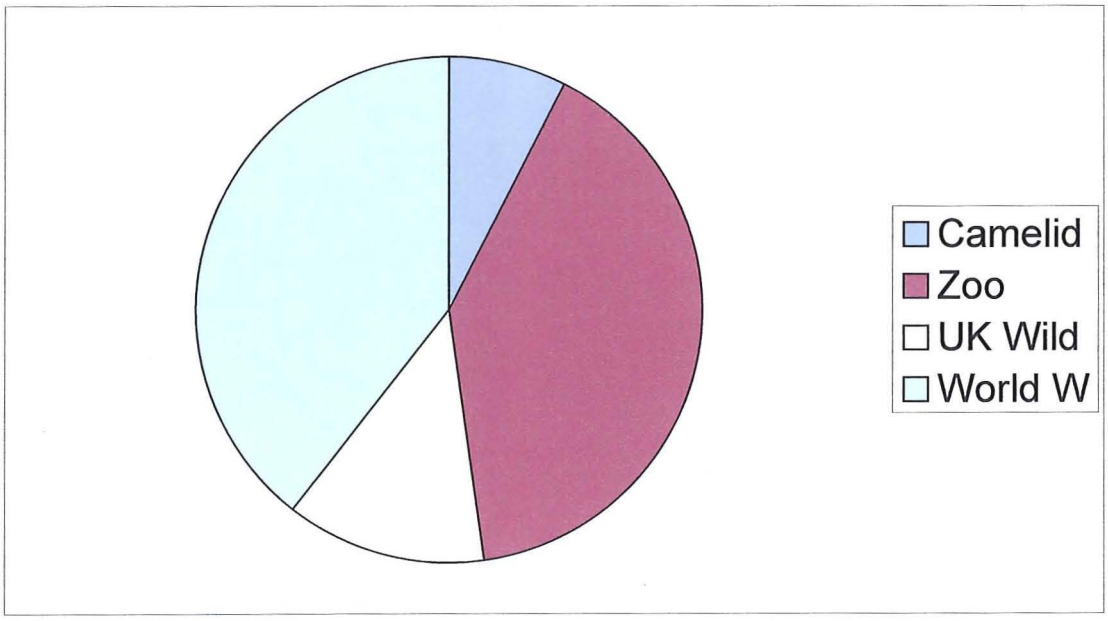
Appendix R 5 Total number of 'other' short communications in the VR 1995-2004.

Year	Small Pet	Wild	Marine M	Poultry	Reptile	Fish	Other	Total
1995	2	14	2	10	2	1	1	32
1996	1	15	1	8	1	0	1	27
1997	1	18	0	6	1	1	3	30
1998	1	17	5	5	4	2	2	36
1999	3	24	4	5	2	3	4	45
2000	1	19	1	5	2	1	3	32
2001	9	35	2	8	3	0	6	63
2002	0	23	3	9	6	4	2	47
2003	3	29	1	4	4	0	3	44
2004	4	22	5	5	4	1	5	46
Total	25	216	24	65	29	13	30	402



Appendix R 6 Total number of wild category short communications in the VR 1995-2004.

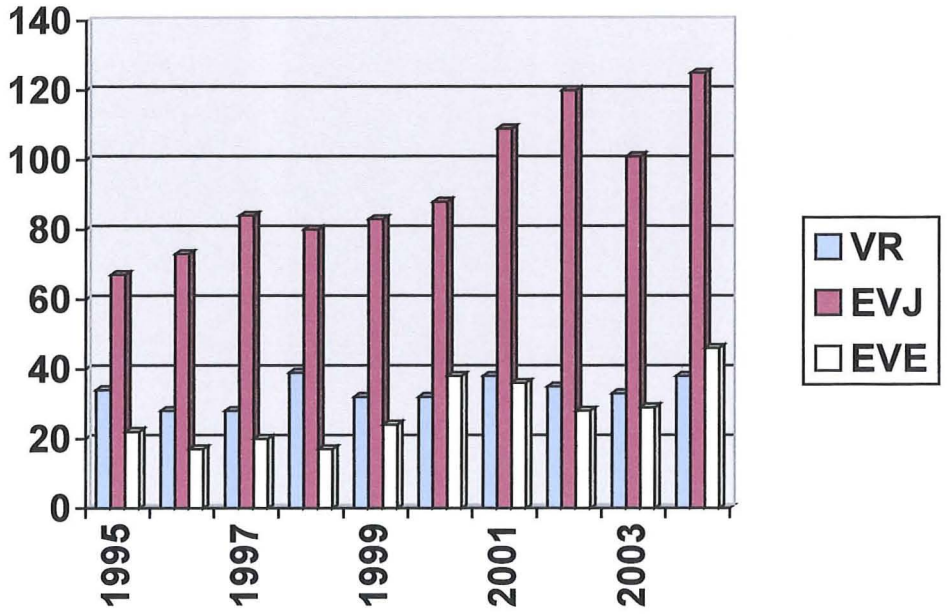
	Camelid	Zoo	UK wild	World wide wild
1995	2	4	5	2
1996	1	3	6	5
1997	1	9	3	5
1998	2	6	4	6
1999	3	12	0	9
2000	1	10	3	8
2001	2	12	0	20
2002	1	5	0	14
2003	3	15	4	7
2004	0	11	3	9
Total	16	87	28	85



Appendix R7 A comparison of the numbers of equine articles in the VR, EVJ and EVE 1995-2004 showing yearly numbers.

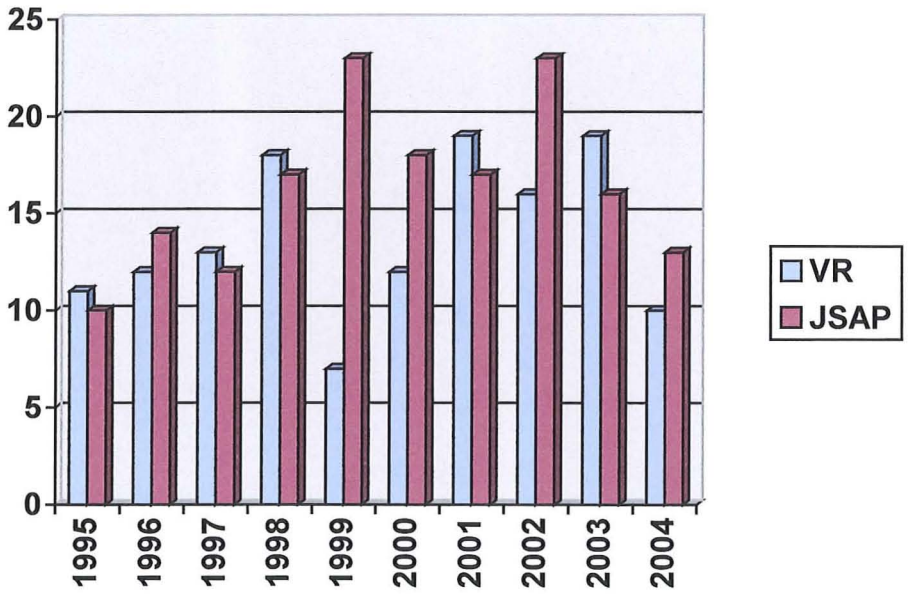
The numbers are analysed into the individual ten years. The EVJ and EVE show the same tendency of increasing numbers. The VR numbers remain steady.

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
VR	34	28	28	39	32	32	38	35	33	38
EVJ	67	73	84	80	83	88	109	120	101	125
EVE	22	17	20	17	24	38	36	28	29	46



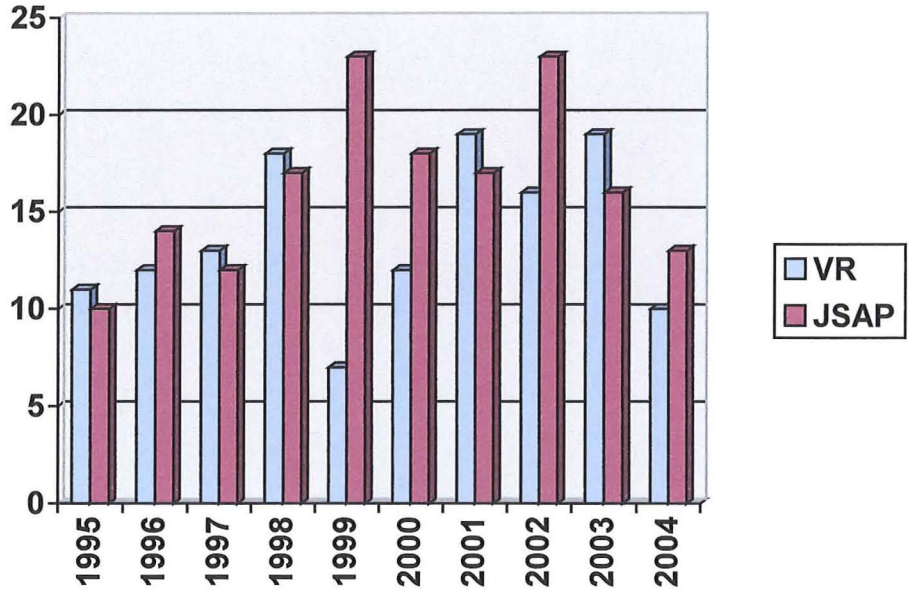
Appendix R 8 A comparison between numbers of canine articles in the VR and JSAP 1995-2004 showing yearly numbers.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
VR	39	38	37	55	56	58	54	52	64	60
JSAP	65	70	73	69	65	70	69	61	65	70



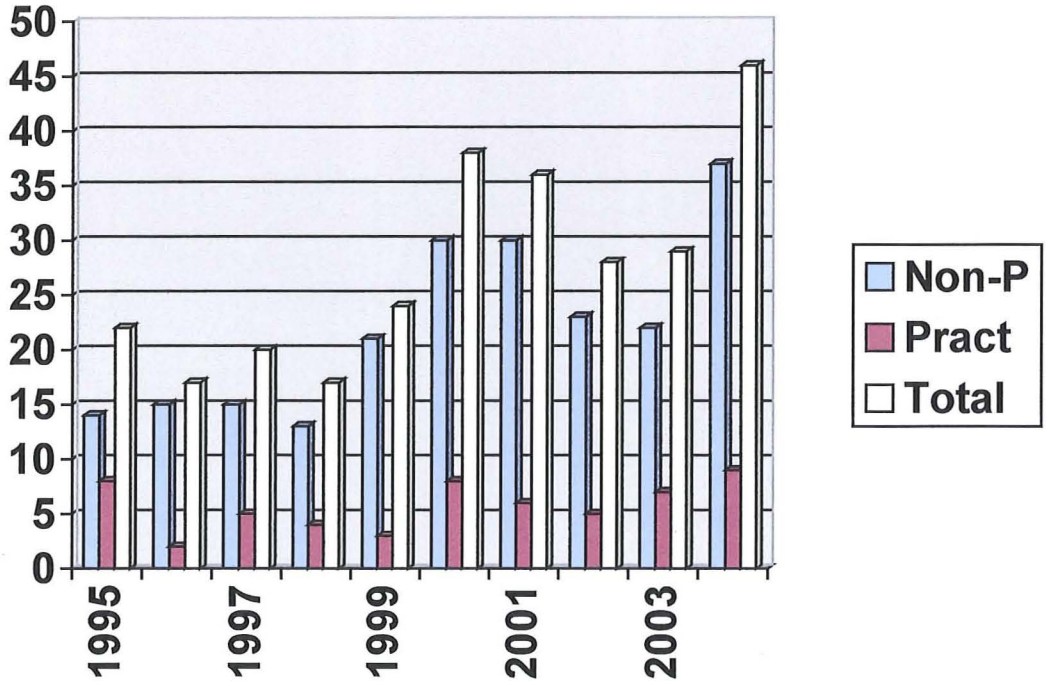
Appendix R 9 A comparison between numbers of feline articles in the VR and JSAP 1995-2004 showing yearly numbers.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
VR	11	12	13	18	7	12	19	16	19	10
JSAP	10	14	12	17	23	18	17	23	16	13



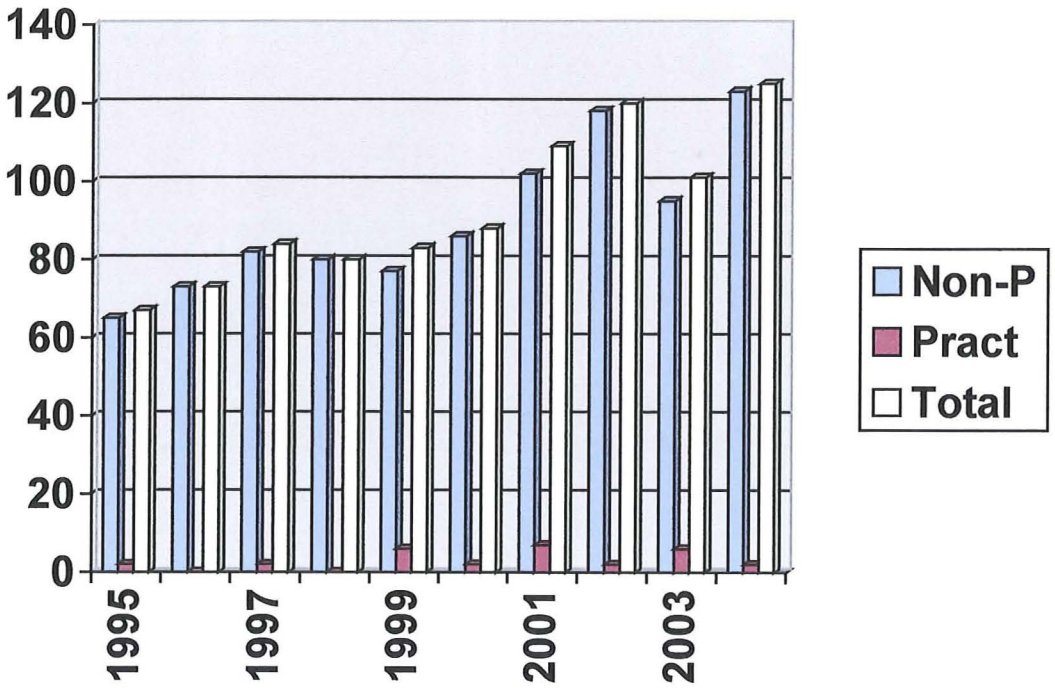
Appendix R 10 A break down of all the articles in EVE

Year	Non-practitioner	Practitioner	Total
1995	14	8	22
1996	15	2	17
1997	15	5	20
1998	13	4	17
1999	21	3	24
2000	30	8	38
2001	30	6	36
2002	23	5	28
2003	22	7	29
2004	37	9	46
Total	220	57	277



Appendix R11 A breakdown of all the articles in EVJ

Year	Non-practitioner	Practitioner	Total
1995	65	2	67
1996	73	0	73
1997	82	2	84
1998	80	0	80
1999	77	6	83
2000	86	2	88
2001	102	7	109
2002	118	2	120
2003	95	6	101
2004	123	2	125
Total	901	29	930



Appendix S 'Publish and be praised'.

By Graham Duncanson

Index

Introduction

There is certainly an art in veterinary science, which compliments the science. The art is learnt by students from their teachers at veterinary schools and as importantly from their extra mural teachers. When they become practitioners learning continues from their colleagues.

Problems arise when the art gets confused with the science. Sadly so much of veterinary medicine is eminence based rather than evidenced based. Unless a practitioner can justify his actions, any learning, which is passed on to students or indeed to other practitioners young or old is at best of doubtful value, at worst is dangerous.

There are four types of evidence

- Class A; The most reliable evidence is obtained from the results of systematic reviews (e.g. meta-analyses) of multiple, randomised, blinded, placebo-controlled trials designed to address the clinical questions of interest. This evidence is currently unavailable in veterinary medicine because too few trials of this nature have been performed. Individual blinded, placebo-controlled, randomised clinical trials also provide Class A evidence, but such evidence is obviously not as strong as that obtained from systematic reviews.

- Class B: Nonrandomised clinical trials using historical controls provide significantly less reliable evidence than randomised trials. However these trials providing Class B evidence, are more likely to be performed in veterinary practice, and the results should be examined critically. In general, positive results from a therapeutic trial utilising historical controls should be interpreted to mean that the therapy evaluated might hold promise, and a randomised controlled trial is needed (Keene 2000). Negative results from such trials are more likely to be true.

- Class C: This evidence is obtained from uncontrolled case series. Evidence obtained from such studies can be difficult to assess, and there are many examples of therapies that were adopted following positive reports from large case series that were later shown to have no benefit or even to cause harm (Spilker 1996).

- Class D: This final category of evidence is obtained from expert opinion, and/or extrapolated from basic research. This evidence is considered to be the least reliable. Unfortunately, such evidence is the most widely available source in veterinary medicine at the present (Mair 2001). This evidence is important and may often be correct, but it should if possible be tested by controlled trials.

In conclusion continuing education journals rely heavily on expert opinion. Such opinion, and its assessment by the peer review system, is valuable and provides meaningful guidance in the absence of more reliable scientific evidence. However, readers need to be aware of the potential limitations of such information. To provide as much reliable information as possible is the main reason for writing this book.

It should be remembered that writing is hard work for everyone. However dare I suggest it is relatively easy for the academic in his ivory tower with peace and tranquillity. It is harder for the university clinician who juggling the roles of clinician, teacher and researcher. It is even harder for the pressurised practitioner. However I am suggesting that it is vital for data available to veterinary practitioners to be published for the benefit of future generations of veterinarians and their patients.

I hope this book will avoid the disappointment and the waste of time, which a poorly conceived, badly written paper creates not only for the unsuccessful author but also the editor and his peer reviewers.

Who is the book for?

This book is for all veterinary surgeons, particularly practitioners, whether they are in first opinion or referral practice. It is for academic veterinarians even if they are full time researchers or teachers. However it may be of more use to the all round academic who has duties in many spheres. Certain authorities (Elliott 2005) consider that clinicians at veterinary schools are only able to carry out worthwhile research if over 50% of their allocated work time is taken up with research rather than clinical or teaching duties.

This book will also be of use to veterinary students who now have to perform research not only as part of their electives in their clinical years but also for their research project, often termed component 5, in their pre clinical studies.

Hopefully veterinary nurses, who are, now encouraged to carry out research (Henshaw 2005), will also use this book.

What do we mean by in-practice research?

There is no reason why large, well-controlled studies should be coming primarily from academia – after all the general practitioner sees many more cases each day than any academic. It is clear that practitioners have a lot of data to share (Dunn 2006). However in-practice research is more than just collecting data. Simplistically it is a scientific enquiry carried out in a practice environment. Because it is dealing with real animals belonging to actual owners, there are a variety of welfare and ethical considerations, which are more acute than in academia.

Perhaps the simplest research is the case report written retrospectively. The clinician is presented with a case or several cases, which appear, in his or her experience to be unusual. The literature is consulted. The uniqueness is confirmed. Whether they are worth recording in the literature is open to debate. The article must have a point and must in some way answer a question or add to scientific or clinical knowledge. In general, case reports need to be:

- Unique to a particular species or geographical area.
- An unusual variant of a well-recognised condition.
- An unexpected association of two conditions.

The author should ask him or herself 'so what'? If there is not a significant reason for the message, don't waste your time publishing it.

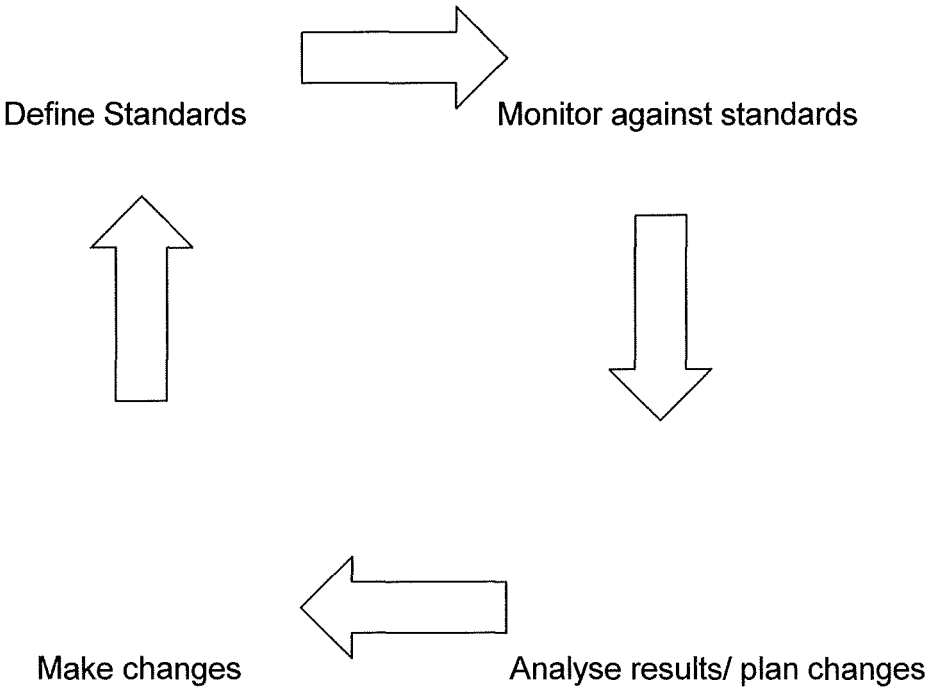
Prospective case reports are easier to label as in-practice research as they are more similar to scientific studies. A clinical problem is found and a study is decided. The sample of animals are yet to be seen by the practitioner, but will have to fulfil certain criteria.

Lastly real in-practice research is a scientific study; some or all of which is carried out in a practice situation. The study has to pose a question. The literature has to

be consulted to see if the question or a similar question has been asked before. A method to answer the question has to be designed. Data has to be collected. The results then have to be discussed in the light of the new data and the published literature. In conclusion an answer to the question has to be postulated.

Comparison of In-practice Research, CA and EBM.

Clinical audit is the systematic critical analysis of the quality of medical care, including the procedures used for diagnosis and treatment, use of resources, and resulting outcome and quality of life for the patient (Anon 1998). Audit is a dynamic process in which standards are defined and data are collected against these standards.



The results are then analysed and, if there are any variances, proposals for change are developed to address the needs. These changes are then implemented and the quality of care reassessed. This closes the audit loop, and the procedure begins again (Mair 2006). The essence of the audit process is that it should be a continual cycle of improvement in clinical practice, designed to bring about an improvement in clinical performance by means of organisational change.

The link with EBM is that the key to effective audit is that the loop must begin, if possible, with the development of evidence-based standards.

Evidence Based Medicine (EBM) is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. This means integrating individual clinical expertise and the best available external clinical evidence from systematic research (Sackett *et al.* 2000).
There are five essential ingredients of EBM.

- To convert our informational needs into answerable questions (i.e. to formulate the problem).
- To track down, with maximum efficiency, the best evidence with which to answer these questions – which may come from the clinical examination, the diagnostic laboratory, the published literature or other sources.
- To appraise the evidence critically (i.e. weigh it up) to assess its validity (closeness to the truth) and usefulness (clinical applicability).
- To implement the results of this appraisal in our clinical practice.
- To evaluate our performance.

The clinical evidence article to appear in a peer reviewed journal can best illustrate the link between EBM and in-practice research.
A clinical evidence article to be valid for publication needs to have certain qualities. E.g.

- Address a clearly defined clinical question.
- Describe a study, based on naturally occurring disease, which provides strong clinical evidence to define outcomes relating to specific therapeutic or diagnostic interventions, and/or to refine prognostic indicators.
- Provide objective and unambiguous case definition criteria that are rigorously applied.

- Evaluate clearly defined clinical outcomes that are rigorously applied and explicitly reported.
- Utilise and explicitly report the details of appropriate controls, randomisation and blinding as appropriate or feasible.
- Include a prestudy estimate of the power of the study to resolve clinical useful difference.
- Include a flow chart of subjects through each stage of eligibility, stating numbers agreeing to participate, randomisation and numbers receiving the intervention in question, completing the study protocol and analysed for study outcome. Retrospective studies should also include a flow chart to account for the numbers of animals eligible, recruited and used in the analysis.
- Use appropriate analytical methods and report effect size estimates and confidence intervals of any results (Marr et al 2006).

Why should we do In-practice research?

The evidence given by experts is often anecdotal or traditional experience untested by peer review. It is important that clinicians publish, as there is a need for audit of procedures performed in practice. These procedures may be of diagnosis, therapy or prophylaxis. The duty of clinicians to publish is one, which, in many respects, is as strong as that of the duty of care of the individual patient (Rossdale 2000). "Knowledge comes but wisdom lingers", said the poet; and wisdom is the product of experience stemming from the aggregate as much as from the individual. Therefore, we must share our knowledge with our colleagues so that we both give and receive advantage of the aggregate.

The term research is often confused with that of experimentation. However, recording and collating clinical details (data) against a background of natural biological processes, influenced by disease and/or therapy, as in the handling of each case, is equivalent to the research worker who details the notes of an experiment in a daybook.
Similarly, a number of cases present the opportunity to test whether or not a cause and effect relationship was merely one of chance rather than actuality.
The academic research worker can limit the variables and thus the size of the experiment. The practitioner does not have this luxury. The practitioner therefore has to have a much wider base of cases. This is particular difficult for the equine clinician, compared with the farm animal or small animal colleague. One authority (Greet 1999) is quoted " In human medicine a series may run to thousands, in small animal medicine to several hundred, but in equine practice we may have only ten!"

Published articles are very important to the practitioner in decision-making in every day clinical practice. Many textbooks are out of date before they are published.

There is a further reason for each member of our profession being involved in research and clinical practice. Our present day undergraduates are selected on the basis of high intellectual capability. It is a paradox that many of them reach advanced standards of education only to be frustrated in practice by a lack of opportunity to achieve standards which fulfil the aspirations their educational excellence leads them to expect. My case studies indicate that 94% of final year veterinary students would like to carry out research. 100% would like to proceed to obtain a further qualification. These findings were markedly different from the findings of authors nine years ago in Australia (Heath et al 1996), who found only 7% of final year students would like to do any research when they qualify.

Sources of information

Reading the literature is a fundamental activity, which should inform all phases in the research process and not be confined to gathering enough material to produce just a literature review. It is vital to keep track of your reading. You must be systematic throughout and keep a record of all you read, including exact bibliographic references. You can use the well-tried card method but once mastered a computerised software system like 'Endnote' will save a lot of time and effort.

If you come across a statement which you might wish to quote, or one which you feel sums up the issues well and you might wish to refer to, make sure you write down a full reference, including the page number. This will help you to find it again. You will need to cite the page number in the reference section, when you are writing up your study.

Go to the library rather than the bookshop. Books, unless fundamental to your long-term usage are very expensive and sadly are often out of date before they are published. Good use of a librarian and a well-stocked library is normally very time efficient. My own research indicated that 77% of successful practitioner authors had access to a well-stocked library where only 50% of unsuccessful practitioner authors had this facility.

Electronic databases of journal articles can be found on the Internet. Many publishers are actually putting their whole journals on line. However to obtain this facility you will either need to subscribe to the journal in question or obtain such information as a registered student through the appropriate university library.

The library at the RCVS is a marvellous facility. However sadly it is no longer free of charge to members.

The literature in its various forms is one of the fundamental building blocks of any kind of scientific research or enquiry. It can give you ideas, broaden your

perspective and make you more critical of some of the taken-for-granted practices in veterinary medicine. It will form the reference point for your study.

Good writing is contagious so your reading will benefit your own writing.

Research Studies

The first stage of writing a scientific article is to decide if you have anything worth writing about. You should have a clear message, which has not already been published. Editors want to please their readers and increase the circulation and the standing of their journal. A reader is likely to read a paper that offers a solution to a question or provides information that will be of value in clinical practice. The reader needs adequate scientific evidence to be convinced by your message. Your message needs to be simple. E.g. 'I have studied the teeth of 300 hundred horses and measured their condition score. 20 had very worn incisor teeth. However their condition scores were similar to the whole population. I conclude that worn incisors do not necessarily cause weight loss in the horse.'

If your message is more vague there is a possibility that your research and your paper are valueless. Simply gathering clinical data is not in-practice research and therefore is unlikely to lead to a worthwhile publication.

Readers are very critical of the first recorded case report. The fact that the practitioner has recorded the first mast cell tumor on the rump of a chestnut horse, is hardly cutting edge science, when they are often seen on the nostrils of chestnuts or the rumps of bay horses.

The author must insure at the onset that the methodology is sound. 44% of successful practitioner authors had done this. None of the unsuccessful practitioner authors in my case study research had considered the methodology before starting their project. At the very onset a distinct question needs to be asked. The research then needs to be carefully planned and executed.

The components of a scientific paper will be discussed in detail in later chapters. However the basic structure of a research paper should be as a narrative argument. The paper is simply a chronological account of what the authors did.

The authors, in this case the researchers, decided on a question they wanted answered or a hypothesis they wanted confirmed. In the example above is the hypothesis that worn incisors are not the cause of weight loss in the horse. The authors will study the literature and find that one previous author has reported an incidence of 7% of horses in a random sample presented to a veterinarian had worn incisors. On consultation with a statistician the researchers will realise they will need a minimum of 300 horses to get a meaningful sample.

Thus they now have the basis for their **introduction.**

They then decide how they are going to get this sample of horses without bias of sex breed etc. then they decide how they are going to measure their incisor teeth and their condition score. This forms their **materials and methods.**

The researchers then gather and analyse their data from the 300 horses. They have their **results.**

They then interpret this new data in the context of the existing literature. This forms their **discussion.**

The narrative argument is an important theme running through a research paper. The casual reader may simply be interested in 'the bottom line' – the conclusion or answer to the question posed in the introduction (Mason 1995). Such readers can quickly obtain this information by reading the abstract or summary of the text. The critical reader needs to be persuaded that the answer given in the abstract is valid and will read the whole paper. Therefore, the text should flow as a single persuasive argument that runs smoothly through the paragraphs and ultimately convinces even the most sceptical reader that paper's message is true.

Where can practitioners publish?

Deciding where clinicians can publish is a topic, which concerns both editors of peer-reviewed journals (Rossdale 2001) and authors. My research indicated that 54% of successful practitioner authors had a specific journal in mind before they started their research. 96% of successful practitioner authors confirmed that clinicians should publish in peer reviewed journals. This same exact figure was found in my previous research (Duncanson 2003).

Ideally authors should target the material they produce to an appropriate audience by publishing in different journals according to the subject of their research (Dunn 2006). Scientific journals want to publish high quality research that has been carefully peer-reviewed and is relevant to their subscribers. The result should be a mutually satisfying relationship for the editor, author and reader.

Sadly the balance is often disturbed by an artificial concept, the Impact Factor (IF). Garfield first proposed this measure of the importance of a journal in 1955. It is measured by the number of references in a year to papers in that journal compared to the number of references in a year to papers in all other peer reviewed journals. The EVJ has the highest impact factor of a single species journal in the English speaking world. The VR is almost as high. JSAP and EVE follow this. The IF gives an indication of the importance of articles published in a given journal. It does not give any information about the value of individual papers and certainly gives no indication of the clinical relevance. The most cited 50% of articles in a publication are cited ten times more often that the rest (Segelen 1997). Editors, who strive to have as high an IF as possible, are obviously looking for such papers. My research indicates that only half of the successful practitioner authors were aware of that fact. None of the unsuccessful practitioner authors were aware of such influences on editors.

There are other influences, which should be taken into account by an author when choosing a journal.

First the veterinary author should choose the audience. Is it going to be general? The VR is the obvious choice. Is it going to be species specific? The EVJ and EVE are available for horses. My research shows the JSAP mainly goes for articles on dogs and cats. For other species particularly wild life, marine mammals, and zoo animals the VR is likely to be helpful. Cattle and sheep do have specific veterinary associations affiliated to the British Veterinary Association (BVA). However although these associations publish the papers read at their meetings, these are not peer reviewed. The Pig Veterinary society does the same. However their magazine does have a peer reviewed section.

If possible, authorship requires matching with readership and mismatching poses distinct risks. For example, publishing in a journal that accepts a wide selection of topics covering many species and disciplines (e.g. the VR) may, despite a high circulation to veterinarians, entail that the particular work is read by only a very small proportion of subscribers. A good example might be my own paper " A retrospective study of conditions seen in pet pigs in practice in the UK" (See Appendix B) which was rejected as a short communication by the VR. They were happy to publish it as a letter. However the peer reviewed section of The Pig Veterinary Journal might have accepted it.

A similar problem is to bury one's magnum opus in a prestigious journal with relatively small circulation and, therefore, risk that few of one's colleagues will read the work.

If one has a paper on dermatology it is obvious that submission to a journal on ophthalmology is inappropriate. My interviews with the editors of the specialist journals brought this obvious message home. However If an author chooses a more specialist audience, there are peer reviewed journals of a high standard just specialising in certain body systems e.g. dermatology or ophthalmology. These are published in the UK but others e.g. gastro-enterology or pathology are only published in English in the USA. The author might prefer something more local.

There is a need to assess whether one is publishing one's work for the readership of the committed clinician or research worker; or in the hope of catching the eye of the generalist. Nowadays, with retrieval systems available through libraries and on the Internet, discerning readers can reach subjects of their interest readily, and will do so. However it is vital for authors to make sure they have a very descriptive tittle and included five **key words.**
Authors need to consider maximising the chance of acceptance and minimising the chance of rejection.

However a prudent author also studies the prospective journal in depth to ascertain what type of manuscript they prefer. Also what are the aims and objectives or mission statement of the journal. A scan through two years of a journal will quickly show the ethos and style of that journal.
The fact that the journal has already recently published articles on your topic maybe a mixed blessing. You may well wish to go elsewhere. Equally you may wish to build on the previous base of already accepted and published material. If your references include many citations from that particular journal, obviously the editor will be pleased, as the impact figure for the journal will rise.
However good your science, sloppy presentation will cause rejection. Talk to your colleagues before selecting a journal. The wrong journal will cause a time delay. A borderline journal may get poor peer review and an unknown journal will let your work be buried. The journal should be selected for audience, circulation, frequency and prestige. Always send a covering letter and keep a hard copy of your paper.

An editor (sometimes multiple) by definition decides whether to accept or reject your manuscript. It is likely that a pre-eminent scientist will make the final judgement on rejection and designate the peer reviewers. There may also be a 'managing editor'. Therefore pre-acceptance will be a problem with the editor and post-acceptance a problem with the managing editor. Editors decide the scope of a journal. If your subject is not covered by a certain journal, try another journal. Remember that the notes for contributors must be followed for the new journal. The manuscript must be complete with no pages, tables, photos or figures

missing. You need to study the editorial style, as if your paper does not conform they will not waste the time of the editorial board and peer reviewers.
Hopefully the editor will have a careful failsafe tracking system in place for manuscripts with a built in signalling. As an author you need to know when to follow up your manuscript. The time scale is likely to be 4-6 weeks between acceptance to rejection or to instructions to modify. Therefore if you as author have not heard anything after 8 weeks you should contact the editor.
Normally there are two peer reviewers who may report to a review board. Equally they're maybe two totally ad hoc reviewers. Peer reviewers are always anonymous. Certain journals keep the authors anonymous from the peer reviewers.
If two peer reviewers disagree, an editor can easily send the manuscript out to a third. The editorial board and the peer reviewers can only advise. It is the editor who makes the decision. Editors in fact have the same goal as the author, which is to publish good science in understandable language.
If both reviewers agree, then normally the editor sends out a modification letter. However a major revision will be requested if they consider there are major flaws. The editor will normally send out a covering statement. The author can always ask for clarification.

Rejection is rarely total. Editors will advise total revision if there is some data seriously flawed or a defect in experimental work.
The advice to authors must be to try and do every thing suggested by the editor.
If a manuscript is accepted and returned it is vital that the author reads the proof very carefully. Corrections should be put not only in the text but also in the margins.
The proof must not be altered substantially. There should be no revision, rewriting or addition of more material. If new material has come to light this maybe added as an addendum. The photographs, graphs and tables should always be checked very carefully. It is vitally important that they are labelled correctly.

The tenses used in a paper are important. You should use the present tense for published work but the past tense for your present work. You will go from past to present throughout your discussion. Your abstract should be in the past tense like the materials, methods and results. The introduction, like the calculations and statistical analysis should be in the present tense.

Generating an idea, which will be publishable.

As a new author you should always be encouraged to write up an idea. You should be encouraged to plan for publication. My research indicated that 73% of final year veterinary students and 90% of new graduates would like to have a manuscript published. These high ideals are excellent and should be encouraged by the whole profession.

However I can not urge new authors strongly enough to consult a more experienced author at this planning stage. So much hard work is likely to come to naught unless the methodology is sound at the start.

An experienced author will guide you as to the type of paper to be considered for the suggested project. If the new author has little clinical experience then a review paper maybe ideal. This will require a large amount of literature research. This in itself will produce a marvellous depth of learning. You will hope to plug a gap in the existing literature or in the established learning on that topic. However you should be aware that the fact that your paper is highly educational, would not necessarily please an editor. Your idea will need to fill a gap in existing knowledge or tip the scales when a consensus of opinion has yet to be reached.

The most common article to be attempted by the new author is the case report. In some ways you might consider this to be the most straightforward manuscript to write. In the small animal field the numbers of case reports in the JSAP are steadily increasing where the number of papers is declining. However as a new writer you should be aware of the many pitfalls in writing up a case report.

Numbers do matter! The editors of most peer-reviewed journals are unlikely to be impressed with an unusual neoplasm in a strange species or a different body system. A rare disease in normal species or a common disease but in a rare species is not going to impress most editors.

Avoid reporting the first recorded case. With modern literature retrieval systems you are very unlikely to be the first.

The same pitfalls occur with a technique paper. You really do have to have an original technique not just a record of a skill you learn from your professor at college, which appears never to have been written up

A technique paper has to have a broad interest with sufficient numbers of cases with a good follow up. Small animal veterinary surgeons normally can find sufficient numbers of patients. Food production and meat hygiene veterinary surgeons rarely have a problem with numbers. However case numbers always cause problems for equine practitioners.

The largest numbers of manuscripts, in the veterinary literature are either cohort studies or case series. You as the author need to concentrate on a well-defined problem. Once again numbers and outcome are very important. Editors will be happier if there is a new approach rather than you're own clinical experience.

Practitioner authors need to link up with a statistician to write a meta-analysis. There must be a large number of previous studies either published or in the pipeline. These studies need to have appropriate patient selection with well-defined outcomes.

Prospective studies are highly thought of by editors whether they are random or nonrandom. However you as an author must concentrate on the methodology and the study design at the outset. The study by definition must be hypothesis driven. Equally by definition it must be **prospective** not post hoc. Once again a statistician must be involved at the beginning. Although a randomised study is the gold standard, unless both the statistics and the design are up to standard the paper will be worthless. If the study is nonrandomised then it is important that either the clinical outcome is well established or the control group is well accepted. If the study can not be evaluated properly then it is unlikely to be printable.

Ironically research papers are the easiest to get published in a clinically orientated journal provided a hypothesis-driven question is explored, which studies the mechanism of a disease.

New authors are unlikely to be arrogant enough to consider writing an unsolicited editorial. These should be left to eminent authors requested by the editor.

Letters to the editor are readily accepted for publication, particularly if they are interest to a wide audience an example can be seen 40 years ago in the VR (Duncanson 1967).

The table below shows a summary of the types of submission.

Type of Submission	Key Concepts
Review Articles	Broad interest, controversy, recent consensus, education
Case report	Novel, unique, timely, broad interest, educational, not necessarily the first 'reported case'
Technique paper	New, Novel broad interest, adequate experience and follow-up
Cohort study and case series	Focused, adequate numbers, well-defined problem, available outcome measures, aim and hypothesis
Meta-analysis	Methodology and evaluable published studies are the key
Prospective study Randomised or Nonrandomised	Statistical validity and adequate design, ?blinded Established or well-accepted controls, relevant interest
Research paper	Hypothesis-driven, mechanistic (vs. phenomenological), state-of-the-art, translational, clinical or basic science
Editorial	Solicited vs. unsolicited, reputation
Letter to the editor	Broad interest, nonparochial, correction of important error

How to start.

In these days of reflective practice a practitioner may well be encouraged just to do the groundwork for writing a paper. The learning will be very significant. However most of us will not be satisfied with starting a project without hope of completion. A prospective author must therefore think very carefully on what time is available for such an ambitious project. My research indicates that only 10% of successful practitioner authors and none of the unsuccessful practitioner authors had considered the time required before starting their project.

A prospective author must discuss the project with professional colleagues at work. Equally a prospective author must consider how the project will affect leisure time. One authority (Elliott 2005) considers clinicians in a university environment should not consider doing research unless they have over 50% of their work time available for such a project. Practitioners will not have this luxury. Extra time will have to be made available either from clinical work, or managerial responsibilities, or leisure time. Only 6% 0f practitioners in my research had outside funding for a research project. Therefore if the project imposes on work time there will be a drop in income.

Not only must a prospective author discuss the project with practice professional colleagues but also with academic colleagues, unless the author has the rare luck to have a professional colleague in the practice who is an accomplished author.

If a colleague approaches me for advice on an in-practice project, my first thought is "Has this colleague got a passion for this subject?" If the answer is in doubt I always point out all the difficulties. My research indicates that 70% successful practitioner authors and 87.5% unsuccessful practitioner authors carried out their in-practice research to try to solve a clinical dilemma for the good of the individuals suffering from the condition under study. This is a very laudable reason for research and indicates a deep-rooted passion for the subject. However naïve authors should be made aware that good ideas have to be well developed to be published. Bad ideas are rejected!

So now you have a good idea which has been approved by an experienced colleague. You have somehow allocated the time in a busy schedule and ascertained that you will not end in the 'poor house'. You need to find the correct environment for reading, gathering together all of the reading matter and writing. 77% of successful practitioner authors in my research had a well-stocked practice library. As might be expected only 50% of unsuccessful practitioner authors had the same.

You have to tame the literature. Photocopying original scientific articles, published extracts, review articles and textbooks is a very useful exercise. However filing them in a retrievable manner is vital. There are now available extremely useful computer programs, like 'Endnote' available, which enable the prospective author to do this exercise electronically.

Ideally you will complete most of the reading before starting on the project. The literary review will have been an education in itself. However in the light of your research you will have to reread and critically appraise the literature. You will need additional references until you have an exhaustive bibliography. Authors would be very well advised to continuously keep their references up to date, to go back after the project to collect the references is extremely tedious. Sadly many papers fail to reach the journal for this reason. The author like a tired National Hunt horse has fallen at the last fence.

An author needs to be very critical of the existing literature. Each paper, however famous the author needs to be fully appraised. Prospective authors need to ask very simple questions of each publication.

- Why did the authors do the study
- How was the study conducted
- Which group of animals was studied
- What treatments and outcomes were studied
- How big were the samples
- What were the conclusions

When the author has answered these questions (The answers can easily be written on the top sheet of the photocopy or against the paper on endnote), the author can grade the papers for importance for the project. Some papers may not even be relevant.

It is now time to start writing. You will not be alone if you become totally blank. This is so well known that it has a specific phrase "writer's block". This maybe a good protective mechanism to stop writers spending many hours writing garbage, which has to be totally rewritten. Authors need to adhere to the various headings for their scientific paper described in the next chapter. They would be well advised not to start at the beginning! The materials and methods section is my starting point of choice.

Writing the manuscript

Introduction

By definition a scientific paper is an original piece of work. Clarity is essential. Some very specialised manuscripts will only be read by academics highly trained in that particular discipline. However the veterinary profession is small and so a paper needs to be clear not only to highly trained academics but also to practitioners and students. It should also be remembered that some practitioners will have less experience and that some readers will not have English as their mother tongue.

"The best English is that which gives the sense in the fewest short words" (Instructions to authors in the Journal of Bacteriology).
To write a paper you need organisation rather than literary skill. It should be an independent, stand alone cohesive study. Series tittles are difficult for editors. It is possible for say number 2 may be held up by peer-review but number 3 passes.

The structure of a veterinary scientific paper.

The majority of veterinary peer reviewed journals require a paper to be of a similar structure as the journals in the wider scientific community. The paper should have a title, a list of authors, an introduction, a materials and methods section, a results section, a discussion and a list of references.
There are other sections, which vary between journals. They include key words, an abstract, a list of manufacturers, and acknowledgements.
It should be stressed at this early stage that each journal has different 'Instructions to Authors'. These should be strictly followed. To help readers the 'Instructions for Authors' for the well-known veterinary peer reviewed journals are shown in the appendix. A recent case study (Duncanson 2006) has shown that 100% of unsuccessful practitioner authors failed to consult these before submitting their paper.

Title.

The title is important. It should be;

- Concise (Many journals have a word count maximum which should not be exceeded).
- Precise
- Informative
- Descriptive (not declarative)
- Representative
- Not misleading
- Specific (type of study and numbers)
- Appropriate for classification (species and body system)
- Interesting (you need to grab the reader)

Remember the title maybe the only part of the paper to be read, so make sure it encourages the reader to continue. Even more important is that indexing and abstracting services depend on the accuracy of the title. Literature-retrieval systems are also important or a paper may never reach the intended audience. So the title is a type of label not a sentence. The instructions to authors will specify the maximum number of words, which should not be exceeded. The title should not over state the findings of the article, nor contain abbreviations or chemical formulas. It should encapsulate the message of the paper. It is a condensed version of the abstract and should contain sufficient information to enable the reader to decide precisely what the paper is about.

One way to achieve a title, which covers these attributes, is to describe the paper in a very few sentences. Precis these sentences. Remove any references to results or conclusions. Draft a title from the remainder. Then check for accuracy. Remember you have to state the "obvious" in the title. You know that you are an equine veterinarian working in Newmarket with racehorses. The potential reader and certainly the literature-retrieval system do not know that. So the title must include the words Thoroughbred racehorse and UK.

You should try to avoid the use of empty phases in the title; e.g. 'an investigation into'....,'a case of'....,'a review of.....'.
If in any doubt about the wording for your title you should consult a senior colleague or even better the editor of your selected journal.

Authorship.

It is naïve to think authorship of a scientific paper is straightforward. It might be assumed that only real contributors would be listed as authors and any others would be included in the acknowledgement section. However this is not the case. Real authorship should be considered very early on in the research process.

There are the Vancouver guidelines to help establish who is an author.
An author needs to have:

- Participated sufficiently in the work to take public responsibility for the content
- Made substantial contributions to the concept and design or analysis and interpretation of data
- Drafted the manuscript or critically revised it for content
- Approved the final version

As a veterinary surgeon and a Member of the Royal College of Veterinary Surgeons (MRCVS) it is paramount that if you are listed as an author you take full responsibility for the content of the article. The RCVS take single exception to members who sign documents, which are not 100% correct. Authorship of a paper is no different. Many journals require the authors to sign a separate letter, taking responsibility for the content of a manuscript before publication.
Asking your Head of Department or, in the case of a practitioner, a friend in academia whether they think a research project is a good idea, is not a **substantial contribution.** However junior members of departments are often under considerable pressure to include more senior members in the list of authors. This pressure should be resisted. It is much easier if the authorship is decided **before** any considerable amount of work has been undertaken.
There is also a Grey area when it comes to the inclusion of a statistician in the list of authors. Did the statistician make a substantial contribution to the analysis and interpretation of data?

The answer must be for the contributors to get together early on in the process and decide everyone's role and agree at that stage who should be

acknowledged. This should be written down. In fact the Equine Veterinary Journal (EVJ) already demands a written form to show each authors contribution. Make sure all the contributors see the raw data and meet to discuss the interpretation of that data. All the contributors should see the draft paper and the final manuscript before presentation. If the editor of the journal or the peer reviewers suggest changes, these should be seen and agreed upon by **all** the contributors. Finally all the contributors should agree the proofs.

The order of the authors should in theory not denote any hierarchy. Therefore the sensible approach is to have the authors listed in alphabetical order with a star against the author to whom correspondence should be addressed.

Authors should give their addresses when the manuscript was prepared. A note can be made of any new address.

Introduction.

The purpose of the introduction is to supply sufficient background information to allow the reader to understand and evaluate the results without needing to refer to previous work. It can also supply a rationale. It should be written in the present tense. It can state the problem, the pertinent literature, the method, the main result and the main conclusion. However certain editors do not like a conclusion in the introduction. It is prudent to read several copies of the journal to see if published papers in that journal contain conclusions in their introductions.

At this point it may well be worth considering your relationship with the editor. If you are a frequent contributor or if you regularly peer review other manuscripts for that journal or are a very well known authority then you may consider your message to be so important that you can write how you think fit. For us lesser mortals it is **very important** that you write what you think the editor wants.

The introduction, particularly the first sentence should, attracted the readers attention. Therefore it is important to decide who your readership is going to be. Then it is sensible to state extremely briefly what you have to say and why it is worth saying. Hopefully the reader will continue from this point.
Remember to study the 'Instructions for Authors'. There are often a maximum number of words for the introduction. This should not be exceeded.
It is important to get the message across to your readers in the introduction that your work is **adding** to existing knowledge. However you must not bore the reader by large numbers of references just because you have spent many hours reading up the background material. On the other hand you do need to briefly review the relevant existing literature.
You should avoid stating established wisdom. E.g. another equine dentistry example would be; 'Cheek teeth pathology causes inefficient use of food and hence can lead to weight loss'. You can be assured that the reader would not be reading the paper if he or she had not heard that fact. Equally a more contentious

statement needs a reference. E.g. ' Horses with rostral displacement of the maxillary incisors are likely to have focal overgrowths on the cheek teeth'.
You should make sure that the reader is left in no doubt as to the question that the paper is addressing. Clearly you need not state the question as a question. 'Condition scores of 300 horses were studied to see if they were influenced by worn incisors' would be better than 'do worn incisors influence the condition score of horses?'
Make sure that the references you cite show the need for your paper and that the introduction ends with a brief summary of the purpose of the research and how it was accomplished.

Key Words.

Normally there is a limit of five key words. With electronic searches becoming the norm they are very important. Most of the indexing and abstracting services are geared to the key word system. The most common are KWIC (key word in context) and KWOC (key word out of context). A list of suitable words or medical subject headings can be found in *Index Medicus.*

Materials and methods.

The materials and methods should be written in the past tense. They should be precise. However the method must be full unless it is standard procedure. In this case a reference should be given. It is quite acceptable to state 'that the cheek teeth were rasped with motorised equipment' as described by Becker (1944). You should ensure that Becker was the first to describe the technique. Failure to do so weakens the authority of the paper as the editor and the reviewers might suspect that you had not read Becker's work and, hence, may not have read some of the other references cited in your article. On the whole it is safer to describe the technique. This makes it easier for readers who wish to repeat the study.

No results should be given in the method.

Writing up the method is an easy task when the study is complete. However it is very dangerous to leave it until then. Flaws in the design become apparent and can not be corrected at this stage.

The method should be written up as far as possible before the study is started. At this stage it is prudent to show the methodology to an experienced colleague. My recent research has shown that 46% of successful practitioner authors obtained help from an experienced colleague where 100% of unsuccessful practitioner authors did not.

Writing down your methodology before you start is a very useful exercise. My recent research has shown that this exercise was neglected by 44% of successful practitioner authors and by 100% of the unsuccessful practitioner authors.

It is very useful to consider at the start what hypothesis you are trying to prove or disprove. If veterinary science is going to remain innovative, it is important that we try to prove novel hypotheses. It is quite acceptable to try to disprove a well-established hypothesis. However scientific development will be delayed if novel hypotheses are always questioned in a negative way.

If well know statistical tests are used, there is no need to describe them in the methods. A *p* should be used to disprove a null hypothesis. On the other hand

give an estimate of the power of the study i.e. the likelihood of a false negative – the *B* error. However if less common tests are used it is vital that they are explained fully or very well referenced.

Keep the description of how your study was designed brief. However how randomisation was accomplished should be fully explained. It is vital that the way animals are selected is explained also why certain animals are excluded. You should explain how the veterinary workers were blinded.

All raw materials should be described. Give exact drug dosages giving the generic name. The proprietary names should be given at the end with the manufacturer's names and addresses. It is important that readers are able to compare your study with others as well as being able to repeat your work.

Common pieces of equipment e.g. A Hausmann Gag in equine dentistry need not be described. However a more unusual or very modern piece of equipment e.g. A battery powered 'Powerfloat' used for motorised equine dentistry should be described. The manufacturer's name and address should be given at the end.

Standard methods of quantifying variables e.g. Lameness in horses, in tenths, need not be explained. However more unusual measurements e.g. lateral excursion of a horse's mandible would need a detailed explanation.

Ethics and welfare are paramount. It would be correct to explain any inclusions or exclusions in the methods section.

Results.

No method should be given in the results although you can give an overall view. The past tense should be used. You can present data, which you did not obtain provided that is clearly stated. However interesting your results, they must be reproducible or the paper will be rejected. The results section maybe short. The introduction, materials and methods will tell why and how you got the results. The discussion will say what they mean. Don't double up the results in text and a table. You should only give **significant** figures. Never give the same data in different ways. Tables should not be used as word lists. Read the notes for authors on the form of tables. Graphs should not be used to beef up data. Only use a graph as well as a table if there is a trend to be shown. If possible try to composite your graphs to avoid part of the graph being empty. Just because electronic graphs are easy, do not use them, unless they make comprehension easier.

Make it easy for the reader to follow i.e. the results should be in chronological order telling a story. However it is normal to present the data from the control group first. They should be presenting answers to your main questions. It is important, however that you report the results that do agree with your hypothesis. These may generate new ideas and save the work being repeated.

Results and data are different but they must be linked to help the reader. It can often to be helpful to omit the data from the text, to make the text easier to read. The raw data can be in a table or a graph.

The wording of the results should be accurate. Two nearly similar statements can mean two very different things. "No supernumerary cheek teeth were found in Shire horses". Is different from, " We were unable to find any supernumerary cheek teeth in Shire horses".

Beware of the use of the word 'significantly'. It has come to be accepted that it means statistically significant. If you state statistically significant, you will have to justify that by showing the statistical analysis. Equally other words like 'considerably' or 'markedly' should be used with care. If the actual figures are

given either in the text or as a table, the reader is quite capable of making his own judgement.

The statistics must go with the data. The test should be decided on in the planning stage not at the end. When normally distributed data has been analysed statistically state the mean and the standard deviation. If the distribution is not normal state the mean and the range between the 25^{th} and 75^{th} percentiles. If you give the *p* values, these should be shown for all the figures not just the figures, which are significant.

Tables and illustrations can cause problems. Many readers will only skim through the text but will study the tables and illustrations. They therefore should stand-alone so that the reader does not have to keep returning to the text. This requires careful design. By all means let them have impact. However authors should avoid the temptation to include too many standard charts or pie charts just because they are easy to reproduce with a computer. The same data should not be shown in a table and a chart unless the chart is required to shown the reader a trend.

Discussion.

In the discussion you discuss not state the results. You point out any anomalies in the results. You show how your results and conclusions agree or disagree with previous work. It is vital that you show the significance of your results and summarise the evidence for **each** conclusion.

However there is a normal protocol for achieving this. You should not repeat the information from the literature, which you have already given in the introduction. You should build on this. Each paragraph should have a lead sentence, which you then will elaborate upon. This should lead you on to the lead sentence in your next sentence and so on. You should progress logically through your story until you come to your conclusion. This is usually at the end of the discussion and not in a section on its own. Your conclusion can also end with a suggestion as to what future research is needed.

The Equine Veterinary Journal (EVJ) has a useful summary of each paper, which appears at the start. This contains the following headings;

- Reasons for performing the study
- Objectives
- Methods
- Results
- Conclusions
- Potential relevance

The discussion could then direct the reader not just to a conclusion but the potential relevance of that conclusion. This seems to clarify the whole relevance of the research and brings it all into a full circle back to the reason for performing the study. It shows the fine line between clinical research and clinical audit, which has a similar circle.

Some authors try to buck the system by stating the main finding in the first sentence of the discussion. Almost like a headline in a newspaper, which is used to try to arrest the reader's attention. The danger is that the reader may not read

any further and the impact of the rest of the work will be lost. Therefore it is much more normal to leave the main message to the final paragraph.

The reader's attention can be caught by other methods at the start of the discussion. The author can state how important the topic is by a summary of field of inquiry. Equally the author can state how unique the study is.

Do not attempt a complete critique of all the literature, which has gone before. Never refer to manuscripts, which you have not read. Only discuss the references, which have a real bearing on your results. I am not saying that you should only give references, which agree with your findings. I am saying that all the previous work, which you refer to in your discussion, should have a direct relevance to your manuscript.

Briefly summarise your findings and how they have advanced the knowledge in the particular subject. You should acknowledge any potential flaws in your methodology and explain how these have been overcome or bypassed. The author should always be conscious that the main thrust of the discussion is what is already known on this topic and what this study adds.

Ending the discussion is very important. You should not end with a 'maybe', or the reader will wonder why the study was performed at all, let alone why it was published. The really useful manuscripts end with a suggestion that a problem has been solved or at least that here is a signpost directing others on the direction to a solution.

Naturally proving your hypothesis is the goal. Equally proving a negative hypothesis is useful. Try to avoid too much speculation. The reader needs firm conclusions based upon good evidence.

Conclusion.

Most journals do not require a conclusion. It is felt that the discussion should lead the readers into making their own conclusions. It is certainly permitted to suggest further research, which would follow your work and answer further questions. It is vital that you do not extrapolate from your findings.

The EVJ has a place in the summary at the beginning of the paper for a conclusion and a section called potential relevance so that the reader can see the main thrust of the paper at a glance.

References

The inaccurate and careless citation of references is one of the most common faults of papers submitted to peer reviewed journals (Tavernor 1993). It is vital that you as an author record all the references correctly. Memory plays tricks with you so it is important to record the exact references the first time you read it.

You should read the whole paper you are quoting, not just the summary. This is particularly important with an abstract in another journal or a citation in another manuscript. Either of these may at best have an error or at worst have been twisted to misrepresent the original findings.

It is equally important that you do not yourself distort the findings to agree with your work.

Quoting 'personal communications' should be avoided unless the quote is from an extremely well known author or prominent member of the profession. Several peer reviewed journals e.g. the EVJ publish on their web page manuscripts which have been passed for publication but are waiting for a place in the journal. It is quite in order to quote these references.

It is often recommended not to quote references, which are more that ten years old. This is obviously a good rule of thumb, particularly nowadays when the width of knowledge is widening at a logarithmic rate. However there are some exceptions.

- The very first groundbreaking paper on a subject.
- The first meta-analysis on a subject.
- A manuscript by a particularly eminent scientist or veterinarian.
- Manuscripts of a non-clinical nature.
- When preparing a meta-analysis.

- When preparing an historical treatise.

As I have elaborated earlier there are two main systems for quoting references in the text of a paper. The Vancouver system where the references are numbered and then shown in numerical order at the end and the Harvard system where the references are shown with the authors name and year of reference. These references are listed alphabetically.

It is very important that you use the system demanded by the journal in the 'instructions for authors'. However if you have prepared a manuscript in one format always save that copy in case you are rejected and have to resubmit to another journal, which demands the other system. The VR, EVJ, EVE and JSAP all use the Harvard system. I have used this system in this book. It is certainly easier to redraft or add information, with a new citation in the Harvard system.

The only ambiguity is whether the whole title of the paper should be quoted in the reference section. Once again the author should consult the 'instructions to authors'. Most journals including the VR, EVJ, EVE and JSAP require the full title.

Lastly I would like to stress that references should be recorded accurately and in full **at the time** when you first read them. This will save no end of time and effort later.

Manufacturers.

Medicines should be referred to by the generic name (Recommended International Non-proprietary Name), followed by the proprietary name and manufacturer in brackets when first mentioned; e.g. fenbendazole (Panacur; Intervet).

Some journals will require you to put the proprietary name etc at the end after numbering the generic name for reference. They may also ask for the address of the manufacturer. You should be guided by the instructions for authors.

Acknowledgements.

Who to acknowledge at the end of your paper, is not an easy question to answer. It is easier to say, whom you should not include in the acknowledgements.
Do not include anyone who is unlikely to read the manuscript. Your long-suffering partner however helpful should not be included. Nor should your computer wizz kid daughter who manages to save the whole document when you thought you had lost it. However do include a senior colleague who has guided you with the methodology or proof read the manuscript. This senior colleague should not be an author unless there has been considerable input.
In the case of a practitioner an acknowledgement of a colleague who helped collect the data would be worthwhile. Equally a student might well like to acknowledge his tutor or another member of staff e.g. a statistician.
Whoever you acknowledge it is vital that you discuss it with the person involved.

Abstract.

This should be a mini version of a paper having a brief summary of each main section i.e. introduction, materials and methods, results, and discussion. It should never give any information in the paper.

Writing up should start while the work is still in progress. However it is often easier to write the abstract which in reality is a précis of the paper after completion of the manuscript.

It should be a summary of the information in the document and give the readers an idea quickly and accurately the relevance of the content to their interests. They can then decide whether to read the whole paper. It should be remembered that the abstract might well be printed in other journals that have links with the publishing journal. Also the abstract is likely to be the first thing the editor and then the peer reviewers read. It needs to be good, as first impressions do matter.

If you are a purist abstracts can be divided into informative abstracts which are the norm. These are sometimes called the summary and are at the head of the paper. The other type is the indicative abstract. These are not used at the heading of a paper but for review papers conference précis etc. They concentrate on the subjects of the paper. They help readers to decide whether to follow up the paper and read it in entirety. They are also a great help to librarians.

With both types of abstract economy of words is paramount. Just because 200 words is the maximum you do not have to write as many as that. Just write the key points.

As indicated earlier the EVJ has a standardised summary, which appears in bold type at the start of the paper. It has the following headings to guide both the author and the reader.

- Reasons for performing the study.
- Objectives.
- Methods.
- Results.
- Conclusion.
- Potential relevance.

Writing the case report.

Writing a case report is similar to preparing a normal paper for a peer reviewed journal; there is one main difference. There is no real materials and methods section as most case reports are retrospective.

On the other hand if the case report is prospective it should be written in a similar style to a research paper. A clinical question is posed and a study is designed. The animals, which have yet to be seen by the clinician, have to meet certain criteria. These criteria are described in the materials and methods section.

The danger of a retrospective case report is that there is no new knowledge. The prospective author needs to satisfy him or herself that the data and its interpretation are really worthwhile. If the author is not sold on the idea, it is certain that an editor will not be impressed. If the cases are totally unique because of their frequency, their species, their geographical area, their association with other diseases or their strange manifestation of a well know disease, then it is worth proceeding. The literature should be reviewed and the introduction written. The materials and methods should be replaced as case histories followed by further investigations. The data can then be given in the results section and discussed in the discussion. My recent research (Duncanson 2006) has found that case histories have become more common in the JSAP at the expense of research papers. However the new editor may well decide to reverse this trend.

The final product.

Whether you write your paper on an old note pad or on the most sophisticated voice activated computer. The most important thing to do is to SAVE IT.
You may be a very lucky person but acts of god can happen and acts of man are common. Don't rely on one computer. Save it on a floppy, a CD, a memory stick, a data bank or what ever. Lodge a copy with your solicitor but don't be naive and imagine the worst won't happen.

My experience is that pictures and charts are the highest risk. Obviously the negatives are more important than prints. However digital images are likely to be used nowadays. These take up a large amount of memory. One picture is likely to be too large for a floppy disc. Continuous saving on the computer also can corrupt them. One day you will open your paper to check on a reference only to find in place of a picture is a large red diagonal cross. This can happen to colour charts as well. Be warned and take precautions to save everything several times over in different locations. To help avoid pictures and charts getting corrupt it is a good idea to save each section separately. It is very easy to merge them all at the end.

It is very tempting to cram the manuscript into an envelope and put it into the post to the editor. It is then his problem to save it. However a few moments at this juncture may save a considerable amount of heartache later.

Check the manuscript against the instructions for authors for your selected journal. Surprisingly my research indicates that only 80% of successful practitioner authors I interviewed carried out this elementary task. Not really surprisingly 100% of the unsuccessful practitioner authors did not consult the instructions for authors.

To help prospective authors I have printed the instructions for the VR, EVJ, EVE and JSAP in the appendices of this book.

In general terms authors should consider: -

- Whether electronic submission is possible.
- If a typed manuscript is required, how many copies.
- The spacing of lines (double spacing is the norm).
- Whether one or both sides of the paper should be used.
- How wide should the margins be?
- How many sets of illustrations should be sent?
- How the illustrations should be identified.
- Whether digital images are acceptable.
- The format of images.
- Whether abbreviations should be used.
- The type of English (English style or American style).
- How medicines should be referred to.
- What type of measurements should be used? (Normally metric).
- The length of the manuscript (The number of words).
- The length of the title (The number of words).
- The length of the summary (The number of words).
- The number of key words.
- The style of the references.

This list is by no means exhaustive. However it is vital that the manuscript adheres to these guidelines. Should the manuscript be rejected it is even more important that the guidelines of the second journal are adhered to. Editors do not like being a second choice.

If you did not heed my advice in a previous chapter you may well now have a problem with authorship (Anon 2000a). It is your last chance to consider this serious matter before your work is in the public domain. The award of authorship should be given only to those making a substantial contribution to conception, design, analysis and writing of the study, or collection of data (Anon 2000b).

Anyone not fulfilling these criteria should appear in the acknowledgements.

Be very cautious in including more than six authors. The editor will query the roles carried out by such a large list.

You may well have to complete a form stating the role of each author. Certainly each author will be asked to sign a letter of submission with the manuscript.

The submission letter is very important. You will be required to state that the work has never been accepted for publication elsewhere. Remember the Royal College of Veterinary Surgeons takes a very firm line with any wrongful certification. You will also be surrendering copyright to the journal or in fact to its publishers. You will also have to state that you are not gaining any financial benefit from the manuscript. Some journals will also require confirmation that you have no real or potential political interest in the paper. Both these statements may cause you some difficulty. If that is the case then you should make a full disclosure. The editor and his board can make an informed decision.

Hopefully your paper will be accepted by the editor for peer review. It would be a miracle if it were accepted without any suggested changes. Most likely you will be offered the chance to resubmit after revision.

It is vital that you resubmit addressing all the suggested points. Ideally the changes should be shown on the original manuscript in red. This can be in legible hand writing or better on the typed script using a word processor. However if the changes are more fundamental you should explain them in a covering letter. Some speed is required. Many journals have a relatively short time limit. If this is exceeded they will treat the manuscript as a new publication. There are other reasons for some degree of haste. It is just possible that another author has done similar work. Also if you require confirmation of the work for a CV or a RAL then stating your paper as being 'in press' is much more convincing that 'in preparation'.

After acceptance you will receive page proofs which will require rigorous checking. Great care should be given to the tables and illustrations. These are the most liable to get mixed. Once again speed is important. However you must be thorough as both an erratum (an error made by the journal) and a corrigendum (an error made by the author) are to be avoided. There should be no major alterations. This is not what proofs are designed for.

On return of the agreed proofs the journal will ask you as the author how many copies of the paper you require. Historically I would urge authors to ask for more than double what they anticipate they would need. However nowadays with the use of electronic mail, I do not consider an author will require many copies. Although a popular paper may be requested by many, only an electronic edition will be required.

What an editor wants or expects from authors.

I would like to stress again that all the editors of peer reviewed veterinary journals, which I have interviewed have expected authors, before submitting a manuscript, to have read the journal "instructions for authors" and to have implemented these instructions. These instructions appear in the appendices at the back of this book. My research indicates that 20% of successful practitioner authors did not carry out this simple task. The fact that 87.5% of unsuccessful practitioner authors did not consult these instructions 'says it all'!

The editor expects the author to be fully familiar with the peer review system. They expect the author to value the peer review process for improving the manuscript. Sadly all the unsuccessful practitioner authors I have interviewed have felt there was a conspiracy, because of the anonymity, and looked on the peer reviewers as the *enemy.* They failed to realise that it is a slow, expensive and time-consuming process. They could not grasp that, although the process is far from perfect, it is the best we have at present.

On the other hand editors expect authors to believe that their papers will be reviewed fairly by an equitable panel of reviewers. They also expect authors to trust them to be honest and unbiased in their decisions.

There is therefore a deep fundamental problem, which will only be solved by a full airing. Editors believe that authors should trust them and the peer review system. Authors, particularly practitioner authors, who have been unsuccessful, distrust them.

Openness by editors does much to dispel some fears. The editors of the four most commonly read veterinary journals namely VR, EVJ, EVE and JSAP are at the forefront of establishing this transparency. The names of not only the editor but also the full editorial board and editorial staff are published in each issue. The EVJ and EVE publish a list of all their peer reviewers annually.

An editor expects total originality. This requirement is usually spelt out in the 'instructions to authors'.

"Submission of a paper (other than a review) to a journal normally implies that it presents the results of original research or some new ideas not previously

published, that it is not under consideration for publication elsewhere, and that, if accepted, it will not be published elsewhere in the same form, either in English or in any other language, without the consent of the editors" ("General Notes on the Preparation of Scientific Papers," The Royal Society, London).

Not withstanding the copyright of manuscripts the editor expects the references included in the paper to be entirely accurate and laid out in one of two formats.

1. Vancouver

References are numbered consecutively as they appear in the text and are identified by numerals in brackets.

2. Harvard

References are cited in the text by giving the name of the author and the year of publication in brackets.

This system is used in this book and in the VR, EVJ, EVE and JSAP.

The large majority of veterinary surgeons are in private practice. If an editor is aiming for the readers to be practitioners then he will require the manuscripts to be focused for practice. One article, which would be very attractive to such a journal, would be the clinical evidence article.

The EVJ provide some good criteria for clinical evidence articles (Rossdale 2003).

3) Papers describing a therapeutic study

Validity

- Assignment of patients to treatments should be randomised (and produce treatment groups of comparable size).
- Trials should be performed single- or double-blinded.
- All animals should be accounted for at the end of the trial.
- Dropout criteria should be determined at the beginning of the trial and no more than 20% of animals should be withdrawn.
- Other than the therapies under test, treatment groups should be treated equally.

- Selection of animals should produce comparable treatment and control groups (i.e. equal representation of sex, breed, and age).

Importance

- Raw results should be presented in a contingency table.

- Comparison of treatment and control groups should be presented as a relative risk reduction, absolute risk reduction, and the number needed to treat together with confidence intervals.

4) Papers describing studies on diagnosis

Validity

- A clearly defined and valid test should be used as a reference standard.
- Comparison of the results of the test should be performed blind.
- Experimental tests should be performed on an appropriate spectrum of animals.
- The reference standard test should be applied to all animals.

Importance

- Raw results should be presented in a contingency table.

- Sensitivity, specificity and likelihood ratios for positive and negative results should be presented.

5) Papers describing studies on harm (e.g. side effects) and aetiology

Validity

- Groups of animals should be clearly defined and comparable.

- Exposures and clinical outcomes should be measured the same way in both groups of animals.
- Follow-up should be performed on all animals and for a sufficient length of time.
- The suggested causal link should be rational.

Importance

Raw results should be presented in a contingency table.

- For randomised trials or cohort studies, relative risks should be presented.

- For case-control studies, odds ratios should be presented.
- The number needed to harm should be presented together with the confidence intervals.

6) Papers describing studies of prognosis

Validity

- Animals in comparison groups should be comparable with any difference in prognosis not accounted for by any other important factor.

- Follow-up should be long enough to reveal any likely effect.
- All animals should be followed-up equally (dropout rate <20%).
- Outcomes should be measured or analysed blind.

Importance

- Results should be reported as % survival at a particular point in time; as median survival (length of time by which 50% of study patients have had the outcome); or as a survival curve that depicts, at each point in time, the proportion of the original study sample who have not had the specific outcome.

- Confidence intervals should be provided.

The editor of the JSAP (Dunn 2006) is also aiming for a readership of practitioners, with an increasing number of high quality submissions being received from non-academic institutions especially the private referral centres. For these authors selecting an appropriate audience for their work is the most important criterion in choosing the journal in which to publish. Publishing in the JSAP targets a large proportion of UK small animal vets (the BSAVA membership).

The editorial process.

The majority of the work of an editor of a peer reviewed veterinary journal is the processing of presented articles through the peer review process to publication. On arrival after noting the date the editor will study your manuscript. He may then decide himself to return it to you for a variety of reasons. The most common is for you to address the omissions from the 'Instructions for authors'.

He may then decide on two peer reviewers and send out your manuscript to them. Equally he may decide to discuss your work with his editorial board. Depending on their decision the manuscript will be returned to you with their comments or two peer reviewers will be selected. The editor will then have to follow up your manuscript to make sure the peer review is completed on time. Extremely rarely will the manuscript be accepted without change. Normally it will be returned to you, the author, for change along the lines suggested by the peer reviewers. Rarely the peer reviewers will disagree. One will feel the paper is worthy of publication and the other will not. The editor can then either send the manuscript out to a third reviewer or more likely he will make a decision as the umpire. To help him with his decision he might ask the reviewers to complete a form such as this below used by the editor of the EVJ.

Merit

(Please circle accordingly 5 = excellent, 1 = poor

Scientific content	1	2	3	4	5
Originality	1	2	3	4	5
Clinical relevance	1	2	3	4	5
Literary style (readability)	1	2	3	4	5

Suitability

Is the EVJ the journal for this paper?

When you receive the paper you should address these in entirety and return the paper to the editor. Assuming the editor is satisfied he will mark down the date as accepted for publication.

Dealing with the rejected article.

Common reasons why a paper is rejected for publication:

- The study did not examine an important scientific issue.
- The study was not original.
- The study did not actually test the author's hypothesis
- A different study design should have been used.
- Practical difficulties led the author to compromise on the original study protocol.
- The sample size was too small
- The study was uncontrolled or inadequately controlled
- The statistical analysis was incorrect or in appropriate.
- The author has drawn unjustified conclusions from his data.
- There is considerable conflict of interest
- The paper was so badly written that it was incomprehensible

It is much easier to pick holes in other people's work than to do a methodological perfect piece of research oneself. However on a more pragmatic note, there may be good practical reasons why the authors of the study have "cut corners" and they know as well as you do that their work would have been more scientifically valid if they hadn't.

Peer reviewers need to decide on scientific validity, originality and importance.

How In-practice research fits into a life course approach

Few pupils at school need to consider planning for their careers when they are only 14. However that is not the case for prospective veterinary students. Veterinary schools are requiring many hoops for pupils to have jumped through before they will grant them an interview. Gone are the days when farmers younger sons with a talent for science at school could expect a place, however good their 'A' level results.

Veterinary Schools want pupils to have worked on stock farms, spent a day at an abattoir, seen practice with a veterinary surgeons doing large and small animal practice. I know of one veterinary surgeons son who failed to get adequate grades in his 'A' levels. He managed to get into veterinary school by carrying out a research project on rabies in Prague.

All the veterinary schools in the UK have different preferences and requirements.

This book might well have been of help to him. However there is no doubt that veterinary students in their pre-clinical years will have to carry out and write up a piece of research.

Final year veterinary students will be expected to do an elective project on a topic agreed with their tutors. This will need to be written up in a full scientific manner. Although many veterinary students will have obtained a degree in their pre-clinical training, it is debatable whether their finals are still at University level 3, undergraduate level, or level 4 postgraduate level.

Finals are passed and you are now a veterinary surgeon and a Member of the Royal College of Veterinary Surgeons (MRCVS). Long gone are the days when this was a qualification was for life.
A likely career course after graduation would be to spend either a year in a selected practice doing a Pre-practice training year (PPT) or doing an internship at a large referral practice or veterinary school. This would be followed by several

years completing various RCVS modules. These would be at a University postgraduate level 4. They will not only be in clinical subjects but other professional attributes e.g. consultation skills. When six of these modules have been completed the graduate will hopefully be awarded a Certificate in Advanced General Practice (CAVP) by the Royal College of Veterinary Surgeons (RCVS). Life course learning will then still continue with study for further RCVS modules, a university MSc or a European Qualification. This will still be at University level 4 but will certainly require a research project. Hopefully this book will continue to act as a helpful guide. Many of these qualifications will allow the use of RCVS modules in a RAL to work to towards the award. Bearing in mind that they can not be used twice.

University level 5 will be then within the GP's grasp either a DProf through a University or through the Royal College a Diploma or Fellowship. Where along this path the Royal College grants specialist status has yet to be determined.

A proposal for a tree of life long learning is shown below. This will follow graduation and the first year in practice (PPT).

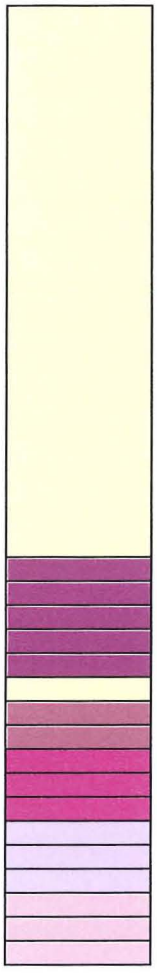
Proposed ladder of Lifelong Learning

Based on QAA credit system

Credit total

(One block = 10 credits = 100 nominal hours study = one RCVS module)

540



DProf

Further studies: additional 360 credits **at Level 5** to obtain DProf or possibly RCVS fellowship and a route to RCVS specialist status

Note that specialist status would not only require a great deal more work than the MSc, but also at a higher depth of knowledge and understanding as defined by the QAA level descriptors.

The credits for the CAVP and the MSc are not double-counted for the next step in the ladder, but can form the basis for an application for credits under the Recognition of Acquired Learning (RAL) scheme.

60 credits at **Level 4**: Research project

30 credits at **Level 4**: Programme planning and research methodology

CAVP (-ology eg. VetGP)

30 credits at **Level 4**: 3 x specified C level modules

CAVP

30 credits at **Level 4**: 3 x C level modules (specified if going for CAVP (-ology)

30 credits at **Level 4**: 'Developing Professional Skills' modules: A, B0 and B1,B2 or B3

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Appendix T1 'C' Module Equine Dentistry

Ref. No.	
Title:	C Module Equine Dentistry
Value:	100 credits
Notional Study Hours:	100

General Guidance Notes:
Before embarking on this, or other modules, candidates are advised to plan a structured programme of continuing professional development to help them achieve their objectives. Involvement in 'learning sets' and networks of other candidates working towards the same or similar modules is encouraged; this could be a service provided by CPD providers, or could be initiated by the candidates themselves.
RCVS considers that candidates will need advisers/mentors to support them through the programme.

Guidance for this Module

Coverage of this module may be integrated with others, particularly Module A2, Clinical Key Skills, and B3, Equine Practice. It is a requirement that ALL candidates entering for the module are Members of the Royal College of Veterinary Surgeons with a minimum of one year's experience in practice. All candidates will normally have successfully completed both Level A Key skills modules, and at least one of the Level B modules, before completing this module.

The objective of the module is to enable the candidate to consolidate clinical knowledge gained at an undergraduate level, and to develop an in-depth understanding of the application of that knowledge in a practice environment in relation to equine dentistry.

Assessment Strategy for this Module

It is suggested that this module could be assessed by the following methods:

- *A **learning diary**, that documents the candidate's experiences over the period that the module is being completed, includes critical commentaries upon at least some of the learning resources used, and describes the application of the learning process to a wide range of cases encountered in practice.*
- *A **dental chart record,** of 100 dental cases. These should include the use of motorised dental equipment and wolf tooth removal.*
- *A **case book** of one equine dental case, of up to 1,500 words in length. This case should be selected to demonstrate the candidates ability to use the competences that have been acquired to cope with a challenging situation, rather than necessarily using classic "textbook case" of a particular condition.*
- *A **practical examination**, of one equine dental case to demonstrate the candidates ability to do a full dental examination, prepare a written treatment plan and carry it out.*

Assessment methods to be determined appropriate to each module.

Appendix T2 'C' Module Imaging Techniques in relation to Equine Dentistry

Ref. No.	
Title:	C Module Imaging Techniques in relation to Equine Dentistry
Value:	100 credits
Notional Study Hours:	100

General Guidance Notes:
Before embarking on this, or other modules, candidates are advised to plan a structured programme of continuing professional development to help them achieve their objectives. Involvement in 'learning sets' and networks of other candidates working towards the same or similar modules is encouraged; this could be a service provided by CPD providers, or could be initiated by the candidates themselves.
RCVS considers that candidates will need advisers/mentors to support them through the programme.

Guidance for this Module

Coverage of this module may be integrated with others, particularly Module A2, Clinical Key Skills, and B3, Equine Practice. Candidates for this 'C' module are advised to complete the 'C' module Equine Dentistry first. It is suggested that those two 'C' modules can be linked with the third 'C' module (Advanced techniques in Equine Dentistry) to qualify for a Certificate in Equine Dentistry. It is a requirement that ALL candidates entering for the module are Members of the Royal College of Veterinary Surgeons with a minimum of one year's experience in practice. All candidates will normally have successfully completed both Level A Key skills modules, and at least one of the Level B modules, before completing this module.
The objective of the module is to enable the candidate to consolidate clinical knowledge gained at an undergraduate level. To have developed a postgraduate understanding of equine dentistry by completing the 'C' Module Equine Dentistry and to develop an in-depth understanding of the application of imaging techniques in relation to equine dentistry in a practice environment.

Assessment Strategy for this Module

It is suggested that this module could be assessed by the following methods:

- *A **learning diary**, that documents the candidate's experiences over the period that the module is being completed, includes critical commentaries upon at least some of the learning resources used, and describes the application of the learning process to a wide range of cases encountered in practice.*
- *A **dental chart record,** of 50 dental cases with accompanying image records showing the use of these imaging techniques in diagnosis.*
- *A **case book** of three equine dental cases, of up to 1,500 words in length. Each of the three cases should include a different type of imaging modality. Each case should be selected to demonstrate the candidates ability to use imaging techniques to aid diagnosis in a challenging situation, rather than necessarily using classic "textbook case" of a particular condition.*

Assessment methods to be determined appropriate to each module.

Appendix T3 'C' Module Equine Surgery

Ref. No.	
Title:	C Module Equine Surgery
Value:	100 credits
Notional Study Hours:	100

General Guidance Notes:
Before embarking on this, or other modules, candidates are advised to plan a structured programme of continuing professional development to help them achieve their objectives. Involvement in 'learning sets' and networks of other candidates working towards the same or similar modules is encouraged; this could be a service provided by CPD providers, or could be initiated by the candidates themselves.
RCVS considers that candidates will need advisers/mentors to support them through the programme.

Guidance for this Module

Coverage of this module may be integrated with others, particularly Module A2, Clinical Key Skills, and B3, Equine Practice. Candidates for this 'C' module are advised to complete the 'C' module Equine Dentistry first. Followed by the 'C' module in imaging techniques in relation to equine dentistry.
It is suggested that this third 'C' modules can be linked with the other two 'C' Modules to qualify for a Certificate in Equine Dentistry. It is a requirement that ALL candidates entering for the module are Members of the Royal College of Veterinary Surgeons with a minimum of one year's experience in practice. All candidates will normally have successfully completed both Level A Key skills modules, and at least one of the Level B modules, before completing this module.

The objective of the module is to enable the candidate to consolidate clinical knowledge gained at an undergraduate level. To have developed a postgraduate understanding of equine surgery in a practice environment.

MODULE CONTENT

At the end of the module, candidates should be able to:

- Demonstrate thorough understanding of the principles of Surgery to include:
  - (a) **WOUNDS AND WOUND HEALING**
    - A sound knowledge of the principles of wound healing of all tissues.
    - An understanding of the influence of surgical interventions and other interventions on wound healing such as healing after the use of diathermy, cryosurgery, chemotherapeutic agents and radiation therapy.
    - The principles and use of drains in wounds.
    - The role of bandaging and casting in wound management.

(b) **THE CONTROL OF SURGICAL INFECTION**

- Concepts of contamination risks in traumatic and surgical wounds.
- Modern concepts of asepsis, sterilisation, theatre design and surgical protocol.
- The epidemiology of surgical infection.
- Nosocomial infections.
- The rational use of antibiotics in surgery.

(c) **INSTRUMENTATION**

- A general knowledge of instruments used in all aspects of equine surgery.
- Knowledge of suture patterns and materials and their role in wound healing

• Show familiarity with principles and practical application of equine general anaesthesia and physical/chemical restraint.
• Demonstrate a general knowledge of the anatomy and physiology of all tissues.
• Show thorough understanding of diagnostic techniques. Principles and application of common imaging techniques. Selection of procedures for diagnosis.
• Demonstrate an understanding of clinical pathology including techniques for the sampling of fluids and tissues and the principles of sample handling. Interpretation of haematological, biochemical and fluid/tissue sample results.
• Demonstrate an understanding and a basic knowledge of postoperative complications; the pathophysiology of shock; principles of haemostasis, transfusions and fluid therapy; care and nutrition of the surgical patient.
• Surgical experience to a reasonable level and to include commonly performed techniques in either soft or orthopaedic equine surgery. See list below for soft tissue surgery. See lameness modules 6 and 7 for orthopaedic surgery
• Review and constructively criticise current literature on the speciality, to enable them to determine its relevance to their current practice.
• Utilise their understanding of Evidence Based Medicine and Decision Analysis to develop practical diagnostic and treatment protocols for their patients.
• Use available resources and communicate with owners in such a way as to achieve optimum results in their practice circumstances in relation to surgical cases.
• Review the outcomes of at least part of their clinical work, using the process of clinical audit to improve performance.
• Recognise when a case is truly unusual, and become familiar with the information resources available to enable them to deal with such cases.
• Recognise when a case is beyond their personal or practice capabilities, and provide an effective channel of referral.
• List of soft tissue surgery

Integument

The management of skin wounds.
The use of plastic procedures and skin grafting.
The management of skin tumours.

Head and Neck

Conditions of the mouth (including the teeth), salivary glands and oesophagus.
Conditions of the upper respiratory tract including nasal passages, paranasal sinuses, pharynx, larynx, guttural pouches and trachea.
Conditions affecting the head and neck.

Urogenital Tract

Surgical disorders of the male reproductive tract.

Surgical disorders of the female reproductive tract.
Surgical disorders of the bladder and urethra.

Abdominal Wall and Alimentary Tract

Surgical approaches to the abdomen and methods of closure.
Exploration of the abdomen
External and internal hernia repair
Enterotomy

ASSESSMENT STRATEGY FOR THIS MODULE

It is suggested that this module could be assessed by the following methods:

- Ten short questions, 6 minutes each in duration
- One essay question out of a choice of three, 30 minutes in duration

Appendix U Paper for Veterinary Record

An independent historical analysis of the Veterinary Record.

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Summary

An analysis of the Veterinary Record over a period of ten years indicates that there is a wide breath of species and organ systems represented in the papers and short communications. The editorial staff, who have a large amount of freedom from the BVA, can be congratulated on an excellent peer reviewed journal. This is fulfilling a vital role in the profession in the UK and world-wide. There does not appear to be a need for a further peer reviewed journal in the UK at the present time.

Key Words

Veterinary Record, Historical, Analysis.

Introduction

Published peer reviewed papers are a vital part of scientific progress within the veterinary profession. The Veterinary Record is a highly esteemed weekly journal publishing such papers and short communications. Twenty volumes of the Veterinary Record were studied as part of research for a Doctorate in Professional Studies to be awarded by Middlesex University and recognised by The Royal College of Veterinary Surgeons. The purpose of the study was to clarify whether another peer reviewed journal was required by the practising arm of the profession.

Materials and Methods

Ten whole years were selected consecutively from1995 to 2004. Each year has two volumes. Therefore 20 volumes, numbers 136 –155 were studied.

All the papers and the short communications were included in the study. They all had been peer reviewed. Any letters or other writings, which although very worthwhile had not been peer reviewed, were not included.

The titles of both the papers and the short communications were examined. The species were recorded and then classified under these headings:

Horses, Donkeys, Cattle, Sheep, Goats, Pigs, Dogs, Cats, Rabbits, Small Pets, Camelids, Reptiles, Fish, Zoo animals, Wild animals found in the UK, Wild animals found world wide, Marine mammals, Poultry and Others.

As with any analysis there were anomalies. Articles on farm ruminants, which included cattle and sheep, were classified under cattle. Articles on dogs and cats were classified under dogs. These difficulties only occurred very rarely. Seven times in total.

I recorded the main body system covered by the article as suggested by a previous author (Rossdale 2002) namely: Cardiovascular, Chromosomal, Gastro-enterological, Neoplasia, Neurological, Orthopaedic, Respiratory and Others. After analysing one volume of the VR I found that there were a large number of 'Others' for Cattle and Dogs. To try and reduce this, an extra category of Reproduction was added for these two species. All the volumes were then examined in this way. If two systems were included in a single article, the article was classified by the most important from a conclusion point of view. An example would be a short

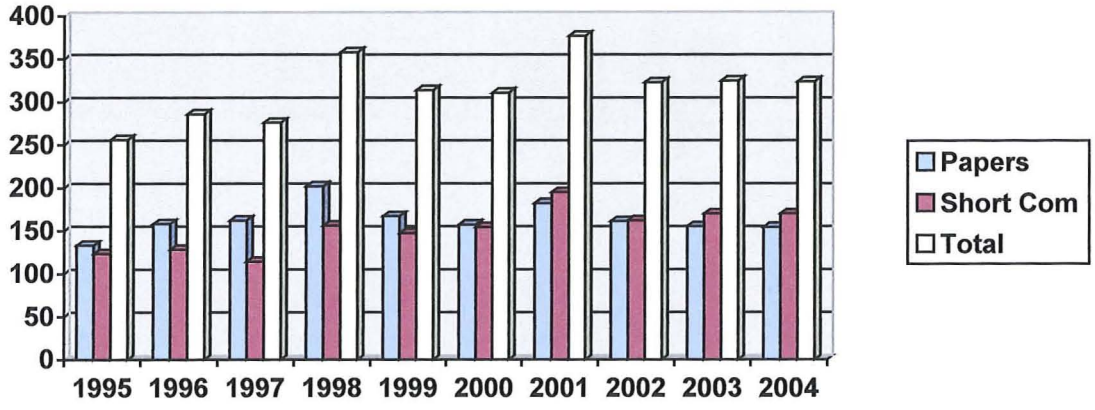
communication describing the causes of respiratory disease in pigs. Neoplasia might be one rare cause of respiratory disease. The article would therefore be classified under Respiratory rather than Neoplasia.

On further reflection, analysis into body systems is extremely complex. The method chosen was very well suited for a single species journal but very cumbersome with a multispecies journal. However there were no other methods recorded in the literature for such an analysis. The fine-tuning of adding an extra category of reproduction for cattle and dogs certainly helped. However to get uniformity I needed a single system. No other system seemed to fit all species.

Results

In total there were 1,631 papers and 1,519 short communications. Both the papers and the short communications are peer reviewed. There were therefore 3,150 peer reviewed articles. There was a fairly even spread over the ten years. As shown in the table and chart below

Year	Papers	Short Communications	Total
1995	133	123	256
1996	158	128	286
1997	162	114	276
1998	202	156	358
1999	167	147	314
2000	157	154	311
2001	182	195	377
2002	161	162	323
2003	155	170	325
2004	154	170	324
Total	1631	1519	3150



The total number of articles each year shows a 27% rise in the ten years from 256 to 324. This rise is fairly steady with two big years 1998 and 2001. This was mainly due to an increase in the number of papers in the first six years and an increase in the number of short communications in the final four years.

The analysis of the papers and short communications into species and systems was complex. It required eighteen sides of A4 to show the full spreadsheet. To simplify the species were further grouped. The combined total of the 1,631 papers and the 1,519 short communications were composed of 807 bovine, 718 others, 518 canine, 370 ovine and caprine, 339 equine, 260 porcine and 138 feline.

An analysis of the papers separately shows a slightly different order numerically of 437 bovine, 310 others, 292 canine, 207 equine, 160 ovine and caprine, 148 porcine and 77 feline. On the other hand the analysis of the short communications alone shows yet another order of 408 others, 370 bovine, 226 canine, 210 ovine and caprine, 132 equine, 112 porcine and 61 feline.

The number of equine papers has declined over the ten years with a one off high point in 2001. Equine short communications are not well represented and tend to have remained static over the ten years. There was an increase in the number of bovine papers up to 2001 and a decline from then on. The number of bovine short communications rose to a peak in the same year but maintained that high level. The number of ovine and caprine, papers and short communications had a peak in 1998 and a low in 2001. The numbers of both the porcine papers and the short communications tended to have annual variations within a small range. The canine papers and short communications tend to have risen over the ten years. The numbers of feline papers and short communications tend to have a wide variation but no obvious annual trends.

The 'others' species category was further broken down into seven groups. These were small pets, wild animals and birds, which included zoo animals and camelids, marine mammals, poultry, reptiles, fish and a further 'others'. This last others category was articles of a non-clinical nature e.g. practice management, manpower surveys etc.

The break down of papers is shown in the table below.

Year	Small Pet	Wild	Marine M	Poultry	Reptile	Fish	Other	Total
1995	0	9	2	8	1	1	1	22
1996	2	13	4	7	2	0	3	31
1997	2	12	3	3	1	1	2	24
1998	1	24	1	5	0	2	5	38
1999	2	8	3	7	1	3	3	27
2000	0	10	4	6	1	1	3	25
2001	4	20	5	5	1	0	1	36
2002	2	16	4	7	0	4	1	34
2003	3	14	2	8	1	0	2	30
2004	3	26	1	5	3	1	4	43
Total	19	152	29	61	11	13	25	310

It can be seen that the wild life category dominates the numbers of papers. This is even more obvious in the short communications shown in the table below.

Year	Small Pet	Wild	Marine M	Poultry	Reptile	Fish	Other	Total
1995	2	14	2	10	2	1	1	32
1996	1	15	1	8	1	0	1	27
1997	1	18	0	6	1	1	3	30
1998	1	17	5	5	4	2	2	36
1999	3	24	4	5	2	3	4	45
2000	1	19	1	5	2	1	3	32
2001	9	35	2	8	3	0	6	63
2002	0	23	3	9	6	4	2	47
2003	3	29	1	4	4	0	3	44
2004	4	22	5	5	4	1	5	46
Total	25	216	24	65	29	13	30	402

If this total of 216 short communications is broken down into four groups of camelids, zoo animals, wild animals in UK and wild animals worldwide we get a clearer picture, as seen in the table below.

	Camelid	Zoo	UK wild	World wide wild
1995	2	4	5	2
1996	1	3	6	5
1997	1	9	3	5
1998	2	6	4	6
1999	3	12	0	9
2000	1	10	3	8
2001	2	12	0	20
2002	1	5	0	14
2003	3	15	4	7
2004	0	11	3	9
Total	16	87	28	85

The sum of the numbers of the papers of the organ-systems studied for the main standard species namely, equine, bovine, ovine, caprine, porcine, canine and feline is shown in the table below.

Year	Cardi	Chro	Gastr	Neopl	Neuro	Ortho	Resp	Other	Total
1995	2	4	27	6	16	10	10	29	104
1996	11	0	19	4	19	11	11	48	123
1997	13	2	27	8	23	16	10	43	142
1998	14	2	29	3	34	12	18	52	164
1999	14	2	28	2	18	9	15	52	140
2000	12	2	15	7	27	14	21	33	131
2001	8	1	32	3	33	12	20	36	145
2002	13	3	19	4	23	6	17	43	128
2003	9	6	27	7	21	11	15	29	125
2004	2	1	31	4	21	11	21	40	131
Total	98	23	254	48	235	112	158	405	1333

A similar table for short communications is shown below.

Year	Cardi	Chro	Gastr	Neopl	Neuro	Ortho	Resp	Other	Total
1995	2	2	25	10	11	3	10	27	90
1996	3	4	25	6	11	5	9	34	97
1997	4	5	18	6	8	2	6	35	84
1998	6	2	18	7	12	9	13	45	112
1999	5	2	25	6	18	10	6	33	105
2000	3	2	27	3	9	11	8	53	116
2001	10	6	25	10	15	7	4	52	129
2002	11	4	23	5	19	4	10	41	117
2003	4	2	22	14	22	6	13	42	125
2004	3	1	22	5	15	13	8	56	123
Total	51	30	230	72	140	70	87	418	1098

The bovine and canine articles account for approximately half the total. Interestingly the others category for these species is approximately half concern with reproduction. Articles on reproduction in the other species are very much less common.

Discussion

The Veterinary Record (VR) is the premier peer reviewed journal in the UK. It is the most commonly read peer reviewed journal in the UK (Duncanson 2003). It is a weekly journal published by the British Veterinary Association. It was founded in 1888. It is devoted to all species in all parts of the world. It contains editorial, news, reports, abstracts from other journals, book reviews, a gazette, letters, peer-reviewed papers and peer-reviewed short communications. The number of the papers has risen from roughly two per week in 1992 to three per week in 2002. The number of short communications is similar. In total the papers and short communications have risen by 27%. There was a good balance between the numbers of papers (1631) and short communications (1519). This compares very favourably with 14 other major biomedical journals, which showed only a 50% rise in the number of articles over a period of thirty years (Carlsson et al 2004). The VR has a high impact factor. It was 1.173 at the end of my study.

The impact factor is calculated from the ratio of the number of citations (references) of articles published over two years (in the whole literature) to the number of citations (references) of articles published over two years (by a journal) (Rossdale 2001).

It is obvious that there is a need for relevant up to date information to satisfy the educational needs of veterinarians. It is interesting that the ease of obtaining such information is very relevant. Time to carry out worthwhile Continuing Professional Development (CPD) is perceived to be very important. One author states that a practitioner needs to work a 34 hours a week throughout his or her

professional life to generate a basic income and maintain professional skills unless exceptionally gifted (Macwhirter 2002). Reading peer reviewed journals must be seen by practitioners to be worthwhile from both a time and a financial prospective.

The 96% of the veterinary profession in the UK read peer reviewed journals of which the VR is the most popular (Duncanson 2003). The VR is therefore read weekly by over ten thousand veterinarians in the UK and many thousand more overseas.

The historical analysis shows some changes in scientific content. These tend to be gradual and subtle, except where animal health issues are given media prominence. These issues may be important as there are zoonotic implications e.g. BSE (Mad Cow Disease) or there are massive disruptive, expensive effects e.g. FMD (Foot and Mouth Disease).

The VR is the voice of the British Veterinary Association (BVA). However it is by no means the voice of the profession in the UK. Also the editorial staff have a large amount of editorial freedom from the hierarchy of the BVA, particularly regarding the scientific content.

The number of species represented was very wide. There is no editorial restraint on the species of animal represented in an article. Articles on cattle were the most numerous, which is beneficial to the veterinary profession in the UK because there is no dedicated peer-reviewed journal for cattle. The next most numerous was the 'others' category. This is extremely diverse. It includes rabbits and small pets. There is no dedicated peer-reviewed journal to these animals

and yet they are playing an important role in the lives of children in the UK. The VR is providing an important role, which is not provided by the JSAP. Equally cage birds and psittisicines, which are very important for older members of society, are well represented. Articles on poultry are numerous, in keeping with the important role of these animals as a major food source. The articles on wild animals both in zoological gardens, in the wild in the UK, and in the wild in the rest of the world, are numerous in the VR. The VR is providing a vital service to the veterinary profession world-wide. It should not be forgotten that marine mammals feature highly. Articles on reptiles and fish are well represented filling a gap in the availability of peer reviewed journals. There are over 10,000 camelids in the UK, and the numbers are increasing. Articles on this species are seen more commonly in recent years. Lastly there are general articles seen in the VR on genetics, statistics, manpower surveys etc. From the aspect of species diversification, the VR can not be faulted.

Included in my analysis was a break down of body systems. I have studied the graphs and tables very carefully to see if there are noticeable trends. My most marked observation is that the representation of different body systems is extremely diverse for all the species. Manuscripts on BSE and FMD are obviously very numerous. However considering their importance the VR is fulfilling a vital role. The editorial ethos is to do their very best to publish all the manuscripts, which are presented. The scientific content is guiding factor, not the author, the species or the body system (Duncanson 2006).

At the present time there are no dates published by the VR when manuscripts are received and then accepted. However the editor is in favour of such a system, which appears to work well in the EVJ. The editor is also in favour of a system of author declaration so that the editor is aware of the input of each author (Duncanson 2006).

The wide breadth of species represented in the VR is often criticised by UK veterinarians. The VR is committed to research. This is confirmed by the editorial comment in December 1997 'Veterinary research is vital to any society which is concerned about the health and welfare of farm and companion animals, and about the safety of food of animal origin'.

No peer-reviewed journal is perfect. One of the reasons for this is the process of peer review is not perfect. The process has evolved over the last 200 years and is the bench mark for scientific advancement. Propagation of information is likely to be speeded up in future with advanced electronic communication. In March 2006 the VR initiated an online facility to present manuscripts. The editor of JSAP (Dunn 2006) asks, "why do people publish in journals?" She states that in this electronic era everyone can publish their work and make it more freely available on the Internet. She feels that whatever the motivation for publication, all authors want their work to be read and respected by their peers. Anyone can publish their work (whatever the quality) on the internet and it is this fact that devalues the material there.

However although the peer-review process may change it is unlikely to be replaced. My results include a very large amount of numerical tables and

resulting graphs. These have not been analysed statistically. Such an analysis would be, at best misleading, at worse meaningless. The fact that there are 0.1675% of papers in the VR on marine mammals is meaningless. No one has studied the number of veterinarians working with marine mammals in the UK or indeed worldwide. Certainly there are no references in the literature on the number of veterinary man-hours worked per year on marine mammals. Therefore it is impossible to say there are too few or too many articles on marine mammals in the VR.

Equally the divisions into body systems is entirely arbitrary. Statistics would not be helpful in unravelling demand for certain systems to be represented for the readership. It is impossible to find out the numbers of readers who are interested in each body system. However it is helpful to study numbers of articles on various body systems on an annual basis to see the effect of the emergence of a new disease or the discovery of a zoonotic implication of a disease.

Acknowledgements

I would like to thank the whole 'Doctorate Group' namely Paul Manning, Sue Shuttleworth, Bradley Viner and Chris Whipp for their help with my research. I would also like to thank David Lane and Annette Fillery-Travis for their facilitating in my research.

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Appendix V1 Agenda for Research Committee Meeting

To be held at the Royal College of Veterinary Surgeons on 10th January 2006.

1) Welcome and Apologies for absence

2) Minutes of the meeting held on 20th April 2005

3) Matters Arising

4) Membership of Research Committee

5) Research Committee Action Plan 2005-2006-01-21

6) September Seminar

7) Research Section on the RCVS Web

8) Presentation by Mr Graham Duncanson

"Achieving publishable results from in-practice research in veterinary science"

9) Reports from major funding bodies

10) Articles

11) Any other business

Appendix V2 Notes of Lecture to RCVS Committee

Introduction and background

- This doctorate project follows a research project carried out by eight experienced practitioners (The SPVS Master's Group) requested by the RCVS in 2000.
- The project was a study to look at the possibility of developing a postgraduate education structure for general practice.

My particular interest was in-practice research.

I found that:

- 96% of Veterinary Surgeons read peer reviewed journals.
- In these journals practitioners write only 65 of the articles.
- 96% of Veterinary Surgeons highly valued articles written by practitioners.
- Only 7% of practitioners publish articles in peer reviewed journals.

Personal mission statement

- To increase the numbers of papers published by practitioners in peer reviewed journals.
- To increase the numbers of practitioners doing in-practice research and publishing their results in peer reviewed journals.
- To evaluate existing peer reviewed journals.

Why am I qualified to carry out this project?

- I have carried out in-practice research other than my MSc.
- I have had papers published in peer reviewed journals.
- I have had papers, which have failed to qualify for publication without radical rewriting.
- I have peer reviewed papers for other authors.

Veterinary Record 1995-2004

- 1,631 papers and 1,519 short communications.
- Numbers have risen by 275 in the ten years.
- Only 2 papers written by practitioners.
- Only 24 short communications written by practitioners.

Equine Veterinary Journal 1995-2004

- 930 peer reviewed articles.
- 3% written by practitioners.
- However it does have a sister journal Equine Veterinary Education.

EVE 1995-2004 (chart handed round to members)

Years	Practitioners	Non Practitioners
1995	8	14
1996	2	15
1997	5	15
1998	4	13
1999	3	21
2000	8	30
2001	6	30
2002	5	23
2003	22	7
2004	37	9

Journal of Small Animal Practice

1995-2004.

Articles written by practitioners	93
Articles written by non practitioners	746
Total number of articles	839

Successful practitioner authors

There were 215. I interviewed 95.

56% were referral GPs.

34% had their first paper rejected before being successful.

44% had outside help with their successful paper.

80% would be happy to help an aspiring practitioner author.

63% would be happy to have their name on a list.

Unsuccessful practitioner authors

- None had outside help
- 87.5% carried out the research to solve a clinical dilemma for the good of the individuals, which suffer from the condition.
- The main reasons for rejection were too few numbers and poor methodology.

Practitioner authors

Only 6% had the use of any outside funds for their in-practice research project.

New Graduates all in practice

- 905 wanted to get further qualifications.
- 80% wanted to do in-practice research.
- 40% thought their training had equipped them adequately to carry out in-practice research.
- 90% wanted to publish a manuscript in a peer reviewed journal.

Final year students. 98% planning to go into practice

- 100% wanted to get further qualifications.
- 91% wanted to do in-practice research.
- 55% thought their training was adequate for them to carry out in-practice research.
- 71% would like to publish an article in a peer reviewed journal.

Encouraging initiatives

- Excellent seminar on clinical research held here by yourselves.
- Excellent training course for practitioners on in-practice research held at Cambridge University Vet School. This is run by Dr Mark Holmes and is funded by DEFRA.
- JSAP September edition with an editorial and articles focused on in-practice research.

What I would like this committee to consider

- Hold an ever increasing list of successful practitioner authors who would be prepared to help an aspiring practitioner author.

- Create a centralised impartial financial support body for funding in-practice research in the UK.

Appendix V3 Letter from Chairman of RCVS Research Committee.

24th January2006

Dear Graham

RCVS Research Committee

Thank you very much for attending our Committee and presenting your very interesting data on publications from practice. I can assure you that it led to a lively debate and all members of the Committee asked me to pass on their warmest thanks. With regard to the specific question of a list of "mentors" (either practice or academic) who would help and support practitioners wishing to publish, we were all thoroughly supportive. Of course who should compose the list and how should it be accesed, updated and maintained were our main concerns. In this regard we would be happy to place the list on the RCVS website (thus providing the access0, and we understand that you have a list following from your survey (thus the composition). I have to impose on you though for one more favour, would you be prepared to check and update the list (perhaps on a quarterly basis)?

This would be particularly important if colleagues died or indicated that they would be no longer willing to be included. If you are willing and provided we are confident that we are not transgressing issues of data protection, I think we can proceed.

Please let me have your thoughts on this.

Kind regards

Yours Sincerely

Quintin McKellar

cc. Liz Marshall; Freda Andrews; Lynne Hill; Sheila Crispin

Appendix V4 Reply to Research Committee

Blackthorn Lodge,
Crostwick,
Norwich. NR12 7BG

Professor McKellar
The Royal Veterinary College

27th January 2006

Dear Quintin

RVCS Research Committee

Thank you and your Committee for your offer of help to establish a list of "mentors" to help practitioners to publish on the RCVS website. I would be happy to help with its composition and its regular update.
I have approximately 60 names and addresses and email addresses. I will contact them to make sure they are still willing to participate. I will also thank them for their help with my thesis and ask if they would like to appear in the acknowledgement section. Several are in Europe, USA and Australia. Shall I include these? They will not appear in the Register of Veterinary Surgeons published by RCVS but have published in the last ten years in the VR, EVJ, EVE and JSAP.
I will record their email replies to allay our fears of contravention of the data protection act.
Hopefully I will have completed my doctorate in four months.

Kind regards

Yours Sincerely

Graham Duncanson

Appendix W1 Mentoring of New Graduates

SIR,- Further to the excellent letter by Tony Birbeck (VR October 8, 2005, vol 157, pp 454-455) which suggests some useful ideas. The Eastern Counties Veterinary Society would like to take a lead on his last suggestion of mentoring. Our society has taken on a new vitality with our new secretary. We would like to offer free membership for one year to all new graduates in our area. Our first meeting will be on 18th October 2005 at the AHT. A full advertisement will appear in your columns. We would also like to ask any new graduates to contact me by email on vetdunc@ukonline.co.uk to set up a new graduate mentoring group. Norbrook Laboratories have kindly volunteered to sponsor this initiative. We would like practice principles to encourage this by allowing their new employees time **in working hours** to attend monthly meeting.

Graham Duncanson President of ECVS, Westover Veterinary Centre, 40 Yarmouth Rd, North Walsham, Norfolk. NR28 9AT.

Appendix W2 Mentoring New Graduates.

"You will have to help my son, Shartri". It was Boxing Day 1966. I had met Shartri, a final year veterinary student on Christmas eve on my arrival in Mombasa, on the over night train from Nairobi. I was 22, had been qualified 5 months and had been in Kenya for ten days.

Shartri's father was one of the richest men in the old town. His main source of wealth was importing carpets from Persia by dhow to Mombasa. He was very disappointed that Shartri was not following the family tradition, like his other sons. He was very concerned that Shartri would not be able to support himself on a meager veterinary surgeons salary.

I, who was in dire need of mentoring, would have to help another who probably knew considerable more clinically than myself. 39 years later I can reflect that I had formed a *learning set.*

There was Shartri, Ramazan, a poultry farmers son, Salim, a cattle traders son and myself. We four, vets or soon to be vets, used to meet in a curry house and talk about the problems we had and what we could do about them.

The Easter Counties Veterinary Society have set up a similar learning set. We will have had our first meeting by the time 'Off the Record' has gone to press, in a pub in Scole. The plan is to meet monthly to discuss the problems we face and how we are going to tackle them. We will discuss the competences, which we feel the new grads should have attained by the end of their first year in practice. We will consider the way forward for us all on the road of *life long learning.* The place that the proposed new modular certificates will form in our lives.

We are all grateful to Norbrooke Laboratories for sponsoring this initiative.

Troubles shared are certainly troubles halved. In no way is this group going to take over from the role of the more experienced practitioners in the workplace. We are grateful to them. I can say we because there is rarely a day that I am not grateful to my partners, who will soon become my employers!

It would be helpful if the time spent on theses meetings could be **within working hours** and I am sure will be acceptable as hours of CPD by the Royal College.

So far there is Tom, Will, Jen and Tristan. However we would love to see more , so do contact me on vetdunc@ukonline.co.uk . All of us might think we are omnicompetent. However I don't think many of your readers will have had to do a post-mortem on a rhea in their first week of practice, like Tom in the picture.

Appendix W3 Reflections on a meeting of new graduates in the Eastern Region held on 20/12/05 at Scole.

All the participants felt the gathering was very worth while. They all considered some system of mentoring would be useful. The help within their practices was very variable, Not only did the help vary from practice to practice but also at different times within the practice. The help was influenced by workload i.e. if the practice was very busy then they felt they were often thrown in 'at the deep end'.

Certain senior practitioners were more helpful that others so that if they were away the new graduate had no one to turn to. Also individual practitioners would gave more time and consideration when they were not under pressure from other demands e.g. home and family.
(Tm) felt that the presence of younger dynamic colleagues with some experience helped to guide new graduates clinically.
(K) felt that getting advice from a colleague from outside of the practice was often preferable.
They was general agreement that different veterinary schools furnished graduates with varying skills. (Cl) felt that contact with former clinical lecturers at college was useful.

All agreed that developing small animal skills was not really a problem as normally there was a more experienced colleague on hand to give advise. However this was very different for developing farm animal and equine skills, except in a hospital situation. The fact of being on your own was scary. This was also felt by all doing SA house calls. The presence of an experienced nurse was helpful.
All felt that mentoring should be part of CPD and should occur during working hours. There were many reasons for this:

- Initially in the first few weeks new graduates were very tired in the evenings.
- There were many evening surgery commitments.
- There were many 'on call' evenings.

- They needed to have an outside life.

All felt that mentoring should be a local phenomena and should be facilitated by a sympathetic experienced practitioner, who had not forgotten what it was like to be a new graduate.

All the new graduates were in general upbeat about their work. However they had all been working for some months and felt that the worse time was behind them.

Considering competences (Tr) felt that it would be unrealistic to expect new graduates to have developed similar skills when they were in such diverse practices. Certainly a SA new graduate would have very different competences after a year to a mixed or equine new graduate.

(Cl) felt that both types of practice were stressful for a new graduate but they had different stresses. SA was less stress for as there was help on hand at the surgery but that they were under continual pressure. (Tm) felt that the isolation in ambulatory work was worrying but at least (Wi) said you have time to walk the dog.

Looking after oneself was difficult. New graduates have little time to do their washing, cook, etc.

They all wanted to meet again and were grateful to Norbrook laboratories for sponsoring the evening. They hoped they would sponsor future evenings.

Conclusions

1. Mentoring is important, possible and worthwhile.
2. It should be local. **Action BVA through regional divisions**
3. It should be in work time. **Action BVA to put pressure on employers, perhaps involving SPVS**
4. It should be counted as CPD. **Action BVA to put pressure on RCVS**
5. It should involve food. **Action BVA to arrange a single medicine firm to sponsor country-wide**

Appendix W4 Reflections on the Mentor Working Party meeting on 18/1/06.

A great meeting offering us in the Eastern Counties a large amount of support. It would appear that mentoring has many facets for different people. Andrew in his Corps situation was concentrating on the clinical aspects. Others were more concerned with social and financial issues. Hanging over all our heads is the worryingly high suicide rate of veterinary surgeons. Sadly no one seems to know if there are any factors which are indicators. Age, Gender, Type of work, Size of practice, .Martial status etc

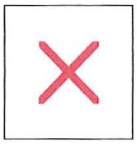
We in the Eastern Counties will continue to concentrate on the New Graduate. Our next meeting will be at Newmarket in the evening of the 6th February at the curry house near to the de Niro's night club. If one of the working party would like to come as an observer/participant we would be happy to see them. We will also invite a local 3 year qualified practitioner to hear how her needs are different or the same as those of a new graduate.

Hopefully Norbrook will be picking up the tab.

We will report on this meeting to the working party. We will also await with interest the full findings of the working party and will try to implement them in due course.

Appendix W5 Minutes of the Working Party Meeting

BRITISH VETERINARY ASSOCIATION



MEMBERS' SERVICES GROUP (MSG)

MENTORING WORKING PARTY MEETING

Notes of the meeting held on 18 January 2006 at BVA, 7 Mansfield Street, London W1G 9NQ

ATTENDANCE

Those present were:

Henrietta Alderman	BVA
David Catlow	BVA (Chairman)
Graham Duncanson	Eastern Counties Veterinary Society
Huw Griffiths	Recent Graduate
Joanne Hosie-Kingham	Recent Graduate
Tom Hume	Eastern Counties/Recent Graduate
Karin Johnson	BVA
Nick Lloyd	SPVS
Christine Magrath	VDS
Brigadier Andrew Warde	RAVC

1. David Catlow, BVA President-Elect, opened the meeting and outlined the aim of the Group which was to establish a format which BVA territorial divisions could use at mentoring meetings for recent graduates. The outcome of this meeting would then be passed to MSG and Council.

2. The Group agreed that any format which arose out of today's meeting should not overlap with the work which was currently being undertaken by the RCVS, VBF and VDS. Henrietta Alderman, as a member of the VBF Professional Support Working Party advised the Group that a meeting incorporating BVA, RCVS, Vet Helpline, VSHSP, Samaritans and others had been held to specifically address the high rate of suicide within the profession. The areas they planned to tackle were improving work place standards, mentoring and communication, co-ordination of support mechanisms and education to ensure that students are adequately prepared for a veterinary career.

3. The Eastern Counties Veterinary Society outlined the format which they had used for a recent graduate meeting which had proved successful. Nine first year graduates in the area were invited to attend the meeting and eight had accepted. These were mainly London graduates who had attended vet school at the same time as Tom Hume and the meeting was social with support solutions coming forward from peers. Eastern Counties found that letters had to be sent out to the graduates as many of the e-mail addresses which were on file were now out of date as the graduates no longer had university e-mail addresses. They also experienced confidentiality problems in getting e-mail addresses from Universities.

4. Christine Magrath of the VDS described how the Recent Graduate Reunion had evolved over the past few years. The VDS had found that the three most important elements to a successful event were a good mentor, the university location and peer group and that the meeting took place during the day of a designated weekend. Mrs Magrath said that pressure was placed on employers to give their recent graduates time off to attend. The VDS had found that the issues raised each year were mostly the same and provided the Group with a list of comments and questions which the recent graduates regularly raised **(Annex A)**.

5. Brigadier Andrew Warde outlined the RAVC ideas for recent graduate support. They aimed to improve the competence of recent graduates by providing guidance on the RCVS Professional Development Phase and by encouraging the use of the RCVS Practice Standards which they believed would help to reduce the stresses faced by a new graduate. Within the RAVC every graduate was allocated a mentor.

6. Brigadier Warde quoted the saying that it took seven encounters before a person trusted another. It was therefore agreed that during any meetings small sub-groups should be formed which would meet regularly between meetings in order that trust could be established between the recent graduates and the divisional reps.

7. The Group felt that initially evening rather than day-time meetings would be easier for recent graduates to attend. Once the meetings were established this could be reviewed. It was agreed that the meeting should take place between 8-10pm to allow time for travel. The Group also agreed that thought needed to be given to the limited time available at an evening event when drafting the structure for meetings.

8. It was hoped that up about 20 graduates would attend and after the general discussion they would be split into two groups to discuss issues raised in small groups. A social element should also be included in the

meetings and food and drink should be provided. The Group agreed that sponsors should be sought to help fund the meetings.

9. It was agreed that the mentoring group should aim to produce a format which would be available to Divisions and the entire profession would be welcome not just BVA members. The Group agreed that the following actions points should be carried out.

(a) BVA to produce a format for the meetings – Draft at **Annex B**;

(b) BVA/VDS to collate a list of scenarios which the divisions could use;

(c) VDS to produce crib/help notes for the mentor/group leader;

(d) BVA to arrange a mentoring training day during the summer;

(e) Divisions to nominate three representatives who would be responsible for the recent graduate meetings;

(f) Divisional representatives to be linked to a SPVS mentor where possible;

(g) Volunteers should be nominated to lead the sub-groups within divisions;

(h) Years 1-5 should be invited to attend the meetings;

(i) BVA to provide a list of support ie Legal advice line, VBF etc;

(j) Vet schools should be encouraged to monitor graduates during their initial years in practice;

(k) Employers should be written to encouraging them to send their recent graduate employees to the meetings;

(l) Widespread publicity should be given to the initiatives and events in the BVA publications, veterinary press and on the website, also practices placing ads in *The Veterinary Record* could be alerted to the meetings;

(m) The divisions, VBF, vet schools and Government Veterinary Society should be advised that the mentoring meetings are going to take place;

(n) A list of regional representatives who recent graduates could contact should be produced;

(o) Initiatives from the AVA to be investigated; and

(p) Potential sponsors should be investigated.

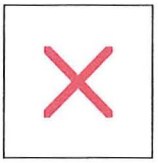
10. The Group agreed to consider the above and make any comments on the mentor e-mail loop mentor@bva.co.uk.

12. The aim was to have the first divisions delivering mentoring meetings by the end of 2006.

Appendix W6 Draft Document

ANNEX B

BRITISH VETERINARY ASSOCIATION



MEMBERS' SERVICES GROUP (MSG) – 9 February 2006

DRAFT OUTLINE FOR TERRITORIAL DIVISION

"MENTORING MEETING"

Introduction

The purpose of this document is to provide BVA territorial divisions with a guide to holding mentoring meetings for local recent graduates the aim of which is to offer support during, what can potential be difficult first years as a veterinary surgeon. The guide for the meetings has been drawn up by the BVA with the assistance of the Eastern Counties Veterinary Society, recent graduates, SPVS, VDS and RAVC.

Organisation

The territorial division should nominate three representatives with good communication skills to organise the meetings and select a Chairman/leader to host the event. Meetings should be arranged at least two months in advance to allow time to promote the event and for recent graduates to arrange time off if necessary. The events should preferably take place twice a year and in the evening as this should make it easier for recent graduates to attend after work. A buffet should be provided. Contact should be made with the local SPVS representative, BVA and VDS who might be able to provide assistance.

Sponsorship

Territorial divisions should seek sponsorship to pay for the meetings.

Mentor Training

BVA organises a free mentoring training day annually which divisional representatives will be invited to attend. The aim of the training day is to outline

formats for the meetings and to demonstrate methods to encourage discussion. Divisional reps will be provided with a list of scenarios which can be used at meetings and crib notes/help notes for the mentor/group leaders.

Marketing

Divisions should identify and invite both BVA and non-BVA members 1-5 year graduates in the region. If possible a relationship with local practices should be established and a point of contact for recent graduate issues identified within the practice. This person would then encourage new graduates to the practice to attend mentoring meetings.

In addition, individual letters should be written to the recent graduates inviting them to attend the mentoring meeting. A mailing list of BVA graduate members can be obtained from the membership department e-mail: membership@bva.co.uk.

Free advertisements can be placed in *The Veterinary Record*, *Off the Record* and on the BVA website. Adverts could also be placed in other veterinary publications such as *The Veterinary Times*.

Divisions should aim to attract 20 recent graduates on the day.

Structure of the Meeting

At the start of the meeting there would be an ice breaker session where a senior vet presents a worst case scenario.

The recent graduates would then split into two groups to discuss the scenarios provided by the mentor which would be primarily on working conditions and non-clinical. The Chair should then select one of the reps to lead a group discussion on solutions:

- how they would have handled the situation;
- what happened next;
- what should have happened next;
- what are the desired outcomes;
- what are the worst outcomes; and
- how to achieve best outcome.

All recent graduates should be invited to write down/identify their concerns (anonymously) which would be used at that or future meetings.

Divisional representatives could then divide the recent graduates into smaller sub group which would meet between meetings.

After the Meetings

The recent graduates should be given a list of support agencies such as the legal advice line, VBF etc and advised that regular updates can be obtained from the members' area of the BVA website. The recent graduates should be asked to encourage their peers to attend meetings and then eventually develop a mentoring role themselves for younger graduates.

Between Meetings

Representatives should arrange monthly less formal events where they can meet with recent graduates in small groups where trust can be established and the problems identified at the main meeting can be worked through.

Appendix W7 Graham Duncanson's reflections on Draft document

This is an extremely useful document and will be helpful for me personally in the future.

Organisation

We have an executive committee meeting in the near future on 6/2/06. I will raise the subject then and hope we can recruit the three representatives with good communication skills. We will publish their contact details and the dates of the two meetings so that they can appear in our 2006/2007 meeting schedule. This will be sent to the editor of the Veterinary Record, as we have done in the past, for publication at appropriate times.

Sadly I was not aware that there are local SPVS, BVA and VDS representatives. How do we find them?

Sponsorship

We will approach Norbrook Laboratories who have been helpful in the past.

Mentor Training

We would be happy to share any experience we have gained with other divisions.

Marketing

We are already trying to do this to increase the attendance at our normal meetings so this will fit in well. There is no doubt that Email is the way forward. Hopefully BVA can let us have Email addresses of the BVA graduates.

Structure of the Meeting

We will attempt to follow the proposed structure depending on the turnout on the day.

After the Meetings

We will try to prepare a meeting pack to contain all the relevant information.

Between Meetings

We will try to encourage these informal meetings. However they are likely to be successful only if a driving force in each small area group can be recruited.

Appendix X1 Paper appearing in EVE

A Case Study of 125 horses presented to a general practitioner in the UK for cheek tooth removal

G.R. Duncanson
Westover Verterinary Centre, 40 Yarmouth Road, North Walsham, Norfolk. NR28 9AT

Introduction

Cheek tooth removal is a procedure associated with a high incidence of complications. This study documents the successful removal of cheek teeth in 125 cases presented to the author, performed in the standing horse, with sedation in most cases.

Materials and methods

Details of 125 consecutive horses treated by the author between September 1997 and February 2001 were recorded. 68 were primary cases and 57 cases were referrals. 42 cases were referred by equine dental technicians (EDT's) and 15 cases were referred by veterinary surgeons.

After taking note of the animals' sex, size and estimate of breed, a visual assessment was made of the animals general body condition and each horse was given a condition score from 1 to 10, with 1 being cachetic and 10 being obese. A history was obtained either from the owner or the referring professional and recorded. Signs that could be attributed to dental pathology were noted and categorized. The animals' given age was recorded into one of the following six age groups (Jeffery 1996):

Birth – 6 months (age of erupting deciduous teeth);

6 months –2.5 years (age of deciduous teeth in wear);

2.5 – 5 years (age of shedding deciduous teeth);

6 – 11 years (age of disappearing cups);

12 – 18 years (age of disappearing stars);

19 years and older (age of V-shaped mandible {no stars}).

The animal's head was observed from the front and both sides, any swelling asymmetry or other disorders were noted. The nostrils were checked for discharge and smell, as was the mouth.

The mouth was washed out using a 500ml syringe containing dilute chlorhexidine. A Haussmann's gag (speculum) was fitted to the animal. After opening a visual assessment of the cheek teeth was carried out with a headlamp, followed by palpation of the oral cavity with a wet hand (Easley 1997). Each cheek tooth was palpated individually. Any cheek teeth, which were loose, fractured or displaced, were recorded. Any diastema, dental caries, evidence of pus or blood was noted.

Animals, which did not show the exact location of the cheek tooth problem, were radiographed after sedation.

Results

There were two stallions, 68 mares and 55 geldings. There were 71 ponies and 54 horses.

The breeds were recorded as below in table 1.

Thoroughbred	6
Thoroughbred cross	27
Arab	6
Arab cross	5
Shire	1
Irish Draft cross	1
Hunter	3
Cob	5
Welsh pony	4
Highland pony	1
Shetland pony	23
Connemara pony	1
Crossbred pony	42

Table 1

The condition score of the animals is shown below in table 2.

Condition Score	Number of Horses and Ponies
1	1
2	18
3	38
4	22
5	26
6	13
7	7

There were no horses or ponies in better condition than condition score seven.

The numbers of horses and ponies in each age group are shown below in table 3.

Number of Horses and Ponies	Age group of Horses and Ponies
0	1 (Birth- 6 months)
0	2 (6 months- 2.5 years)
2	3 (2.5 years- 5 years)
12	4 (6 –11 years)
28	5 (12- 18 years)
83	6 (19 years and older)

Table 3.

The reasons for the removals are shown below in table 4.

Number of animals	Reason for removal
91	Loose tooth or loose teeth
8	Iatrogenic fractured tooth
6	Displaced tooth (One was supernumerary)
8*	Maxillary cheek tooth apical infection with secondary sinusitis causing a unilateral malodorous nasal discharge
2*	Rostral maxillary cheek tooth apical infection with an external discharging sinus tract
7*	Mandibular cheek tooth apical infection with an external discharging sinus tract
3*	Diastema causing food retention and periapical pocketing

*These 20 horses were radiographed after sedation using detomidine hydrochloride (1) (1mg/100kg bwt) combined with butorphanol tartrate (2) (2mg/100kg bwt) given iv. The horses with discharging tracts had a metal probe inserted into the tract and their nose was rested on a table. The xray plate was placed on the diseased side of the head and a lateral view was obtained. The head of the xray machine was then angled to give a forty-five degree lateral oblique view. The radiographic signs of bone lysis and focal widening of the

periodontal space were used to indicate a diseased tooth. In two cases where the author was in doubt as to which tooth was diseased, a human dentist reviewed the radiographs. A fluid line was seen in the eight animals with nasal discharge on the lateral projection.

Other dental abnormalities were recorded below in table 5.

Sharp enamel overgrowths	122
Focal overgrowths	8
Wavemouths	3
Shearmouths	26 (4 bilateral and 22 unilateral)
Calculus deposition	68 (All seen on the canines. 5 were also seen on the incisors and 1 on the buccal aspect of the maxillary cheek teeth
Diastema	68 (These cases were recorded as well as the 3 cases requiring extraction)
Overerupted cheek teeth	87
Dental caries	0

Treatments

In eight horses the cheek teeth were so loose that digital removal was carried out without instruments or sedation. A single dose of sedative as described above was required to enable removal in a further 96 horses. 16 horses required a second dose at half the first dose i.e. detomidine hydrochloride (1) (0.5 mg/ 100Kg bwt)

combined with butorphanol tartrate (2) (1 mg/100Kg bwt). Three horses required a third incremental dose with a further two horses requiring a fourth.

In the 117 horses where instruments were required, the teeth were removed in the following manner. The gingival margins both linqually and buccally where elevated using dental picks (3) (Kruuse, Ltd) to expose as much of the tooth as possible. Molar spreaders were applied between the tooth to be extracted and the tooth in front and held in position for three minutes. They were then applied between the tooth to be extracted and the tooth behind and held in position for a further three minutes. This procedure was repeated several times. Molar spreaders were not placed between the first and second cheek teeth (Triadan _06 and _07) because of the danger of loosening the first cheek tooth. Similarly they were not placed between the fifth and the sixth cheek teeth (Triadan _10 and _11). The correct size of molar extraction forceps was selected and placed in position. The jaws were placed as apically as possible on the tooth. The jaws were closed as tightly together as possible and held in position with black gutter tape. Extraction was then started with a rocking motion in a horizontal direction. This was firm but not violent. Every few minutes more gutter tape was applied to keep the jaws as tightly closed as possible. Several operators were used to keep the rocking motion going.

The time taken to remove the teeth was recorded from the moment extraction was started. In 91 horses (73 %) extraction was accomplished in less than 20 minutes. These horses were all old horses, which had loose teeth on palpation. This first group included the 21 horses with multiple extractions. The gag was lowered after 20 minutes for a rest period of two minutes (the extraction

forceps were not always removed). In 19 horses (15 %) extraction was accomplished after a second 20 minute period. All the horses requiring 40 minutes or less for the extraction were over 12 years old. Eight horses (6%) required a third 20 minute period. Five horses (4%) required a fourth 20 minute period. Two horses (1.6 %) required even further time, one in 95 minutes and the second required 122 minutes.

When a squelching noise was heard more elevation was applied with a small piece of hard wood taped to the forceps to act as a fulcrum. With some of the teeth extracted from young animals it was often necessary to rotate the tooth lingually to achieve extraction.

104 horses (83%) only had one cheek tooth removed. 15 horses (12%) had two cheek teeth removed, four had three cheek teeth removed, one animal had four and another had five cheek teeth removed. All these multiple extractions were accomplished in less than 20 minutes.

In the 104 animals having a single tooth removed the individual teeth numbered using the Triadan system were: -

Arcade Number One	Arcade Number Two	Arcade Number Three	Arcade Number Four
(Right maxillary)	(Left maxillary)	(Left Mandibular)	(Right mandibular)
Tooth No 106 removed from 5 horses	Tooth No 206 removed from 7 horses	Tooth No 306 removed from 6 horses	Tooth No 406 removed from 5 horses
Tooth No 107 removed from 3 horses	Tooth No 207 removed from 2 horses	Tooth No 307 removed from 7 horses	Tooth No 407 removed from 6 horses
Tooth No 108 removed from 5 horses	Tooth No 208 removed from 4 horses	Tooth No 308 removed from 3 horses	Tooth No 408 removed from 3 horses
Tooth No 109 removed from 9 horses	Tooth No 209 removed from 8 horses	Tooth No 309 removed from 7 horses	Tooth No 409 removed from 5 horses
Tooth No 110 removed from 3 horses	Tooth No 210 removed from 2 horses	Tooth No 310 removed from 1 horse	Tooth No 410 removed from 1 horse
Tooth No 111 removed from 1 horse	Tooth No 211 removed from 2 horses	Tooth No 311 removed from 5 horses	Tooth No 411 removed from 3 horses

The one supernumerary tooth, which was removed, was at the caudal end of the left lower arcade.

After the extraction the mouth was out with large volumes of dilute chlorhexidine and rechecked for further dental pathology. Routine dental rasping was carried out if appropriate. A new dental chart was prepared. The owner was recommended to seek further dental treatment in 6 months. It was stressed on the dental chart that particular attention should be paid to the cheek teeth opposite the removed teeth.

Discussion

There have been many other published series of equine cheek tooth removal mainly from referral centres (Prichard and Hackett 1992) (Lane 1996) (Dixon et al 1999). These show many complications, which are not so evident in this series from practice. There are potential hazards in removing diseased dental tissue in horses because of the complicated regional anatomy of the horse's head. Oral extraction lessens these hazards, as there is less invasive surgery. Some authors (Howarth 1995) recommend that oral extractions should be limited to either very old horses or those with severe periodontal disease because of the dangers of tooth root fracture and/or incomplete dental removal. Most of our cases involved extractions in aged horses or the teeth were already loose and therefore were covered by his criteria. The average time for extraction was just over 20 minutes with a range of 3- 49 minutes. However 14 (11%) of this series could not be considered old horses. These horses need to be considered

separately. The reason for the extraction was that they had apical infections. The average time taken for extraction was 74 minutes with a range of 60-122 minutes. These were the total times for extraction. In three horses tooth root fracture did occur. However the root fragments were removed eventually. Verification was checked digitally, visually using a small dental mirror and with follow up radiographs. The length of time required is a very good indicator of the difficulty of removing cheek teeth per Os in young horses compared with older horses.

Allocating an adequate amount of time is of vital importance. Firstly so that the rocking procedure to loosen the tooth is done very slowly and in a very controlled manner. Secondarily so that if tooth fractures occur there is an opportunity to remove the fragments. Adequate sedation and pain relief is also of vital importance for the welfare of the horse and the staff involved. No local regional anaesthesia as described by some authors (Schumacher & Schramme 1999) was used. Pain response was only observed when the gingival margins were elevated but was not seen during tooth loosening procedures.

No packing of the alveolar socket was carried out in this series. Certain authors (Lane 1996) suggest that using repulsion or buccotomy techniques alveolar packing is vital. The author does not feel that it is necessary using a per Os technique. None of the 125 cases required follow up surgery for the alveolar sockets left open by these extractions.

Dental surgery has evolved slowly over the past 150 years. However oral extraction was the method of choice in the early reports. In consequence some of

the most useful molar extractors are of considerable age or are copies of these old instruments. It is useful to have a variety of molar extraction forceps with variable lengths of handle and various sizes of jaws. It is not necessary to have ratchets to hold the handles together. The use of black gutter tape is preferable. Dental picks of various sizes are required. Molar spreaders are required but a single size is sufficient.

The diagnosis was evident in the majority of these cases. However, in a few, the radiographs were very difficult to interpret. The human dentist was very helpful for the correct interpretation of some radiographs. However if scintigraphy had been available it would have been used as recommended by others (Weller et al 2001).

Manufactures addresses

(1) Pfizer LTD, Kent, UK.

(2) Fort Dodge Animal Health, Southampton, UK.

(3) Kruuse Ltd, York, UK.

References

Dixon, P. (1999) Equine dental disease: a long-term study. Equine vet. J. pp 519-528.

Easley, J. (1997) Equine oral examination. Proceedings of the Fifth World Veterinary Dental Congress. pp 96-101.

Howarth, S. (1995) Equine dental surgery. In Practice. pp178-187.

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Lane, G (1996) Equine Dental Extraction- Repulsion Vs Buccotomy: Techniques and Results. Proceedings of the Fifth World Veterinary Dental Congress. pp 135-138.

Prichard, M.A. et Hackett, R.P. (1992) The records of 61 horses undergoing tooth repulsion for treatment of alveolar periostitis were reviewed. Veterinary Surgery.21:2, pp 145-149.

Schumacher, J. et Schramme, M.. Anaesthesia of the teeth and associated structures, BEVA regional meeting 1999.

Weller, R. et al (2001) Comparison of radiography and scintigraphy in the diagnosis of dental disorders in the horse. Equine vet. J.33 (1) pp 49-58.

Appendix X2 Proceedings for AAEP Congress.

Cheek tooth removal per os. What is and what is not an act of Veterinary Surgery?

Introduction

Cheek tooth removal is a procedure associated with a high incidence of complications. This study describes the successful removal of cheek teeth per os in 125 cases presented to a veterinary surgeon, performed in the standing horse, with sedation in most cases.

Materials and methods

Details of 125 consecutive horses treated by the author between September 1997 and February 2001 were recorded. A full history was taken before a full clinical examination. A full oral examination was performed (Easley 1997).

Results

There were 14 horses under eleven years of age. 28 horses between 12-18 years and 83 19 years or older.

The reasons for the removals are shown in the table below.

Number of animals	Reason for removal
91	Loose tooth or loose teeth
8	Iatrogenic fractured tooth
6	Displaced tooth (One was supernumerary)
8*	Maxillary cheek tooth apical infection with secondary sinusitis causing a unilateral malodorous nasal discharge
2*	Rostral maxillary cheek tooth apical infection with an external discharging sinus tract
7*	Mandibular cheek tooth apical infection with an external discharging sinus tract
3*	Diastema causing food retention and periapical pocketing

*These 20 horses were radiographed after sedation using detomidine hydrochloride (1) (1mg/100kg bwt) combined with butorphanol tartrate (2) (2mg/100kg bwt) given iv.

Treatments

In eight horses the cheek teeth were so loose that digital removal was carried out without instruments or sedation. A single dose of sedative as described above was required to enable removal in a further 96 horses. 16 horses required a second dose at half the first dose i.e. detomidine hydrochloride (1) (0.5 mg/ 100Kg bwt) combined with butorphanol tartrate (2) (1 mg/100Kg bwt). Three horses required a third incremental dose with a further two horses requiring a fourth.

In the 117 horses where instruments were required, the teeth were removed with varying amounts of difficulty.

The time taken to remove the teeth was recorded from the moment extraction was started. In 91 horses (73 %) extraction was accomplished in less than 20

minutes. These horses were all old horses, which had loose teeth on palpation. This first group included the 21 horses with multiple extractions. In 19 horses (15 %) extraction was accomplished after a second 20 minute period. All the horses requiring 40 minutes or less for the extraction were over 12 years old. Eight horses (6%) required a third 20-minute period. Five horses (4%) required a fourth 20-minute period. Two horses (1.6 %) required even further time, one required 95 minutes and the second required 122 minutes.

104 horses (83%) only had one cheek tooth removed. 15 horses (12%) had two cheek teeth removed, four had three cheek teeth removed, one animal had four and another had five cheek teeth removed. All these multiple extractions were accomplished in less than 20 minutes.

Discussion

There have been many other published series of equine cheek tooth removal mainly from referral centres (Dixon et al 1999) (Lane 1996) (Prichard and Hackett 1992). These show many complications, which are not so evident in this series from practice. However the difficulty of cheek tooth removal should not be underestimated. There are potential hazards in removing diseased dental tissue in horses because of the complicated regional anatomy of the horse's head. Oral extraction lessens these hazards, as there is less invasive surgery.

There is a reasonable argument that a lay person would be able to remove the very loose teeth in the eight horses in this series digitally. However as soon as instruments are required I consider it is an act of veterinary surgery. There is a danger of tooth fracture and/or incomplete dental removal. There are also welfare issues as sedation and pain relief are required.

The average time for extraction in the 111 older horses was just over 20 minutes with a range of 3- 49 minutes. However 14 (11%) of this series were younger horses. The average time taken for extraction was 74 minutes with a range of 60-

122 minutes. These were the total times for extraction. In three horses tooth root fracture did occur. However the root fragments were removed eventually. Verification was checked digitally, visually using a small dental mirror and with follow up radiographs. A non-veterinarian would not have access to these facilities.

The following problems were encountered and I feel reflection is useful.

- Allocating an adequate amount of time is of vital importance.
- A large range of sizes of extractors and spreaders is important.
- The rocking procedure to loosen the tooth is done very slowly and in a very controlled manner.
- If tooth fracture occurs all the fragments need to be removed and this should be checked by palpation, visually with a mirror and radiographicly.
- Adequate sedation and pain relief is also of vital importance for the welfare of the horse and the staff involved.
- No packing of the alveolar socket was carried out in this series. However the need for regular follow up dentistry was stressed both verbally and with a dental chart.

Manufacturer's addresses

(1)Pfizer LTD, Kent, UK.

(2)Fort Dodge Animal Health, Southampton, UK.

References

Dixon, P. (1999) Equine dental disease: a long-term study. Equine vet. J. pp 519-528.

Easley, J. (1997) Equine oral examination. Proceedings of the Fifth World Veterinary Dental Congress. pp 96-101.

Lane, G (1996) Equine Dental Extraction- Repulsion Vs Buccotomy: Techniques and Results. Proceedings of the Fifth World Veterinary Dental Congress. pp 135-138.

Prichard, M.A. et Hackett, R.P. (1992) The records of 61 horses undergoing tooth repulsion for treatment of alveolar periostitis were reviewed. Veterinary Surgery.21:2, pp 145-149.

Appendix X3 Proceedings showing alterations.

Equine cheek tooth removal *per os*. What is and what is not an act of Veterinary Surgery?

Introduction

Cheek tooth removal in horses is a procedure associated with a high incidence of complications. This study describes the successful removal of cheek teeth in the standing horse *per os* in 125 cases presented to a veterinary surgeon, with use of sedation in most cases.

Materials and methods

Details of 125 consecutive horses that had cheek teeth extracted by the author between September 1997 and February 2001 were recorded. A full history was taken before a full clinical examination. A full oral examination was performed (Easley 1997).

Results

There were 14 horses under eleven years of age. 28 horses between 12-18 years and 83 19 years or older.

The reasons for the cheek teeth extractions are shown in the table below.

Number of animals	Reason for cheek teeth extractions
91	Loose tooth or loose teeth
8	Iatrogenic fractured tooth
6	Displaced tooth (One was supernumerary)
8*	Maxillary cheek tooth apical infection with secondary sinusitis causing a unilateral malodorous nasal discharge
2*	Rostral maxillary cheek tooth apical infection with an external discharging sinus tract
7*	Mandibular cheek tooth apical infection with an external discharging sinus tract
3*	Diastema causing food retention and periapical pocketing

*These 20 horses underwent dental radiography following sedation with detomidine hydrochloride (1) (1mg/100kg bwt) combined with butorphanol tartrate (2) (2mg/100kg bwt) given iv.

Treatments

In eight horses the cheek teeth were so loose that digital removal was carried out without need for dental extractors or sedation. A single dose of sedative as described above was required to enable cheek teeth extraction in a further 96 horses. Sixteen horses required a second dose, at half the first dose, i.e. detomidine hydrochloride (1) (0.5 mg/ 100Kg bwt) combined with butorphanol tartrate (2) (1 mg/100Kg bwt). Three horses required a third incremental dose with a further two horses requiring a fourth sedation.

In the 117 horses where cheek teeth extractors were required, the teeth were removed with varying amounts of difficulty.

The time taken to remove the teeth was recorded from the moment extraction was started to completion of extraction. In 91 horses (73 %) extraction was accomplished in less than 20 minutes; these horses were all old horses, which had digitally loose teeth. This first group included the 21 horses which had multiple cheek teeth extracted. In 19 horses (15 %) extraction was accomplished within 40 minutes. All the horses requiring 40 minutes or less for the extraction were over 12 years old. Eight horses (6%) had the extractions performed within 60 minutes. Five horses (4%) required a fourth 20-minute period. Two horses (1.6 %) required even further time, one required 95 minutes and the second required 122 minutes.

104 horses (83%) only had one cheek tooth removed. 15 horses (12%) had two cheek teeth removed, four had three cheek teeth removed, one animal had four and another had five cheek teeth removed. All these multiple extractions were accomplished in less than 20 minutes.

Discussion

There have been many published series of equine cheek teeth extractions mainly performed by the repulsion technique in referral centres (Prichard and Hackett 1992, Lane 1996, Dixon et al 1999). These show many complications, which are not so evident in this series from practice or from a study of 100 oral extractions by Dixon et al (2005). However the difficulty of cheek tooth removal should not be underestimated. There are potential hazards in removing diseased dental tissue in horses because of the complicated regional anatomy of the horse's head. Oral

extraction lessens these hazards, as compared to repulsion or buccotomy as there is less invasive surgery.

There is a reasonable argument that a lay person would be able to digitally remove the very loose teeth in the eight horses in this series that had very loose teeth. However as soon as instruments are required for cheek teeth extractions, I consider the procedure to be an act of veterinary surgery. There is a danger of tooth fracture and/or incomplete dental removal during oral extractions. There are also welfare issues, as sedation and pain relief are required and post-operative cellulitis and later alveolar sequestration and osteomyelitis can develop.

The average time for extraction in the 111 older horses was just over 20 minutes with a range of 3- 49 minutes. However in the 14 (11% of this series) younger horses, the average time taken for extraction was 74 minutes (range of 60-122 minutes). These were the total times for extraction. In three horses tooth root fracture did occur. However the root fragments were removed eventually. Verification of their removal was performed digitally, visually using a small dental mirror and with follow up radiographs. A non-veterinarian would not have access to all of these facilities.

Some problems were encountered in performing these extractions and on reflection, the following could help reduce or prevent such problems.

- Allocating an adequate amount of time for an extraction is of vital importance.
- Having a large range of sizes of extractors and spreaders is important.
- The rocking procedure to loosen the tooth must be performed very slowly and in a very controlled manner.

- If tooth fracture occurs all the fragments need to be removed and this should be checked by palpation, visually with a mirror and radiographically.
- Adequate sedation and pain relief is also of vital importance for the welfare of the horse and the staff involved.

No packing of the alveolar socket was carried out in this series. However the need for regular follow up dentistry was stressed both verbally and with a dental chart.

Manufacturer's addresses

(1)Pfizer LTD, Kent, UK.

(2)Fort Dodge Animal Health, Southampton, UK.

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Lane, G (1996) Equine Dental Extraction- Repulsion Vs Buccotomy: Techniques and Results. Proceedings of the Fifth World Veterinary Dental Congress. pp 135-138.

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Appendix Y Vet Times Article "Equine Colic".

Equine Colic; An old GP's reflections.

Of all the improvements in equine surgery and medicine, I consider the greatest have been in the treatment of equine colic. There have been massive benefits to both the horse and its owner. These advancements have been through excellent research, evidence based medicine (EBM) and clinical audit (CA). The veterinary schools and the referral practices are to be congratulated for all their hard work. I, as an old GP, am extremely grateful.

Gone are the seemingly endless days and nights of worrying about horses with colic.

I am sure all of us look forward to the results of the recent BEVA EBM initiative, which I hope will guide us in the field in our initial treatment of the colic case. However while we are waiting for these results I would like to share with you my flow chart for colic cases. I find it extremely useful when my mind is sadly not at its best in the middle of the night on a cold Norfolk marsh.

With all these excellent advancements, I think it is still very important that we have in the forefront of our minds the welfare of the horse.

I need the following questions answered by the owner:

1. How old is the animal?
2. Has the animal had colic before and did it have surgery.
3. When did they last see it in a normal state?

I need to make my own assessment as to:

1. Whether the owner is prepared for a large bill.
2. Whether the owner is prepared for a very large bill.
3. Whether the owner is prepared to care for the animal properly.

It is beyond the scope of this article to describe my full examination of the horse, which will vary enormously in different scenarios. However I always:

1. Measure a heart rate.
2. Measure a respiratory rate.

3. Assess the gut sounds.
4. Look at the color of the mucous membranes and gauge a capillary refill time.
5. I take the rectal temperature. (useful to assess the danger of a rectal examination).

I normally do perform a rectal. However I am mindful of the danger to the horse and to me. The use of Buscopan or Sedation (with a combination of Domosedan and Torbugesic) may well be the way forward. I do not attempt a rectal on a small pony or donkey. Even at this stage I have the answers to the red questions in the back of my mind.

I need this information to decide whether at this visit I am going to treat this as a surgical or a medical case. If I decide it is a surgical case I then need to decide whether I am going to refer the case or guide the owner into making the decision of euthanasia.

So let us return to our history.

1. There must be an upper age limit for colic surgery. I feel this varies with whether we are dealing with a pony or a horse. In my opinion ponies over 25 and horses over 20 are not sensible surgery cases.
2. I feel if an animal has had colic surgery before this must make the prognosis more grave, where it has had colic and recovered medically that must make the prognosis more encouraging.
3. The possible length of the colic symptoms aid decision-making. If the animal is known to have been well within the last two hours then a trial of analgesia is acceptable (obviously if the signs have not indicated a surgical case). Otherwise prompt referral is indicated if in any doubt. However if the symptoms have been obviously long standing and there is likelihood of severely damaged bowel, I feel from a welfare point of view immediate euthanasia is the only option. Naturally no practitioner should feel totally alone. If one is in doubt a second opinion from within the practice or from a neighbor is well worthwhile. (We are very fortunate in our area in that we have colleagues who are not only excellent clinicians but are also very helpful practitioners).

Now let us return to our assessment of the owner.

1. If the owner is not prepared for a large bill (Please do not misunderstand me. I am not saying our veterinary charges either as first opinion GPs or at referral centres are not entirely justified) then everyone has a problem. The cost of sedation for a rectal, passing a naso-gastric tube, performing a peritoneal tap, scanning the abdomen etc are going to enlarge the bill. Multiple visits might end up being more expensive than hospitalisation. One thing is certain although immediate euthanasia maybe the less expensive option, and from a welfare standpoint can not be faulted, just the removal and cremation of the body incurs considerable expense.
2. If the owner is not prepared for a very large bill then surgery is not an option.
3. If the owner is not prepared or is unable to provide adequate care for the animal then medical care at home is not an option.

Now I am sure that I am going to be justifiably criticised for making these assessments. However I stand by my rational. Valid adequate insurance is excellent but when that is not available is it fair to put pressure on an owner to spend thousands of pounds on a horse, which although much loved, is replaceable for much less. I will be interested in all your views.

Last of all we come to the vital signs, which I am sure have been discussed by many authors, who are much more knowledgeable than myself. However here are a few of my thoughts which flash through my mind in the middle of the night on a cold Norfolk marsh.

1. Heart rate is a very good predictor.
2. A rising heart rate is bad news.
3. A heart rate, which remains high after analgesia is also bad news.
4. Signs of pain, I include respiratory rate, are helpful but should be judged with care.
5. Absence of gut sounds particular after analgesia is bad news.
6. The presence of gut sounds, which then disappear, is bad news.
7. The color of the mucus membranes is a good predictor.
8. Signs of dehydration are bad news.

I have put my head on the block. Will the BEVA EBM survey agree with me?
I am now going to put the debate to my three colleagues whose opinions I always respect but sometimes disagree with!

Chris Tomlinson writes

To the owner colic is a disease that has connotations of death written all over it and so it is for us as the all knowing vet to put their minds at rest. The owner is obviously concerned to phone us and however trivial the situation may seem over the phone we should attend and place them in the situation where they can make an informed decision as to what is best for their horse given the constraints of their purse. We have to put our stamp on the situation particularly where the horse is kept in a livery yard where all kinds of advice is given freely and the level of emotion can run high! The owner has asked us to attend and we are in the privileged position that our advice will be listened to! However humility is a great asset in these cases and I always remember my old lecturer Jim Pincent words to us 'trust no one not even yourself!' So attractive as it may seem to fob off the owner with some explanation, if you feel out of your depth resist the inclination and share the burden! Our referral centre is very happy to talk through cases with us if we are uncertain what the next step should be whether to refer or to hold tight. I am of the mind that I prefer to look a bit stupid than to sit on a case and have to refer when really the situation is hopeless. So I always ask if the horse is insured this means referral is an option if any doubts are in my mind.
Uncontrollable pain signified by behavioural changes e.g. restlessness or increased heart rate ring alarm bells and unless I can make a positive diagnosis of impaction the owner is left in no uncertainty that I am concerned. Ponies are difficult to judge as they are past masters of hiding pain and have caught me out in the past so elevated heart rate is how I often assess them. In contrast Arabs can appear to be a certain surgical colic on first impressions but subside after analgesia!
It is tempting to rush in and rush out if you feel uncomfortable or overawed by the client but here attention to detail getting a full history so you can inform a

referring centre if necessary are important. It also stamps your authority on the situation. Things I need to know have been mentioned by Graham
There are two things that involve the client directly I like to ask about as it shows an interest in how they have been looking after the horse.
1) Nutrition particularly in the autumn and spring as the grass changes I find can be associated with a tympanitic colic and so I always ask if there has been a change in husbandry to the animal.
2)Worming history particularly recently (in the last 5 days) or 'cannot remember' can both be significant but we have seen cases of worm damage 4 weeks after a 5 day course of Panacur Guard (Intervet) where a horse has been turned out on to a wormy paddock . I always take a dung sample for a worm egg count whatever time of year if the worming history indicates nothing has been given for 6 weeks following the premise 'common things happen commonly that's why they're common'.
The most difficult cases are where the owner has no money but declares great affection for the pony, which has a very poor prognosis. Here sympathetic but firm handling has to be done. I find sedation can give the owner thinking time to come to terms with the fact that the horse has to be put down without me appearing too brutal on the first visit.
Honest advice given on the basis of a full history and clinical examination with time taken to explain the ins and outs of the situation over a cup of coffee generally work. The problem is when you are in a rush. You take short cuts in the examination or in the discussion. Mistakes are then likely to occur.

Ann Kent writes

As a mainly equine practitioner with a certificate in equine practice, I agree with most of my older colleague's points.

Some additional observations and comments I would like to add are:

- When obtaining the history I always ask if there has been any recent change in management, or if the horse has been wormed in the last few days.

- I rectal all colic cases unless they are very tiny (I am lucky to have smaller hands than Graham), extremely fractious or have completely normal parameters on arrival, and are no longer colicing. This helps me from an anatomical point of view, but also in detecting sand. I find that an animal with an empty rectum with scant mucus is extremely likely to be a surgical case.

- I stomach tube all cases, which are suspected to be surgical, as well those horses treated medically requiring a second visit due to reoccurring pain and all impactions. The latter receive magnesium sulphate, liquid paraffin and warm water.

- I feel that no matter what the economics of the situation, if I need information to reach a diagnosis I will have to get it.

- I do not set upper age limits, treating each case as an individual.

- I consider pain returning within two hours does not necessarily indicate a surgical case, as some impactions can show this sign and still be treated medically.

- Like Graham I find respiratory rates can be very helpful in some cases. These are usually older stoical ponies, which have slightly elevated heart rates, but respiratory rates above 30, which always sets off warning signs that the pony is in more pain than it is showing.

- If I am certain in my own mind that a horse has surgical colic and referral is not an option, I will euthanase it immediately having discussed the options and consequences carefully with the owner.

- I do not agree with Graham in that cases requiring multiple visits, with the inevitable expense, are better off dead, if the owner has not got the money to pay, as some impactions require several calls or hospitalisation. I admit that I

am not as an astute business woman as Graham, and may put the welfare of the horse before that of its owner.

- I still remember my main rule of practice – if I can not control the pain and the horse cannot be referred, euthanasia is the only option before I drive away. Then I can sleep at night.

Tom Hume writes

Graduating in July 2005, Equine colic was one of the few conditions that I felt reasonably comfortable with. Firstly the universities do an excellent job in drilling home a full colic protocol, so that this is almost second nature by the time you get to your cold Norfolk marsh! Secondly, the referral centres are usually kind, helpful and accommodating. Thirdly, owners usually appreciate the gravity of colic and are easily prepared for the worst.

Like Graham, I place a lot of importance on heart rate and mucous membrane colour. I feel that pain, estimated by rolling/kicking, can be confusing and poorly correlates to prognosis. I too try to establish the economics of the situation shortly after arriving, as this decides which diagnostics I perform and treatment options I pursue.
I always perform a clinical examination, usually a rectal, sometimes place a naso-gastric tube and have never yet done a peritoneal tap.
My routine treatment is Buscopan i/v followed by finadyne paste or i/v if necessary. I never use liquid paraffin, favoring magnesium sulphate (epsom salts).
I leave the horse a hay net but withhold short feed for 24 hours.

Word Count	**Project**	**34,500**
	Appendices	**53,250**